THE MARINE REVIEW

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Still More Ships Needed by U. S.

Traffic Conditions in Every Port Show Merchant Marine Inadequate—But Should New Ships be Built By Government?—Board Must Decide

A NEW shipping board is functioning at Washington. Only one member of the original Denman administration and also, to all practical purposes, only one member of the Hurley regime remains. The majority of the board, including the chairman, is entirely new. New men mean new policies and in some directions at least, new polices are needed. The essential task of the Hurley organization, namely to build up a huge shipbuilding machine to meet a tremendous war emergency, was on the whole ably performed. But since the signing of the armistice, great changes have taken place in the maritime world and the shipping board seems to still be groping in the dark with respect to many phases of the new situation. The new shipping board, therefore, assumes the reins of power at a critical moment. The future of the American merchant marine lies in its hands. Many problems must be solved. The American merchant fleet now totals over 13,000,000 gross tons. This being the condition, it is pertinent at the outset to inquire if it is necessary for the government to continue to build ships until over 800 more are completed, as announced in our August issue. Among other major problems also up for consideration, are the questions of selling our tonnage to foreigners, the ultimate disposition of the uncompleted wooden ships, the enlargement of dry dock facilties, and the construction by the government of huge liners described elsewhere in this issue.

Getting Down to Bed Rock

There is some comfort in the statement of one of the new members of the shipping board that the policy of the reorganized board will not be framed but will evolve and that it will be constructive, conservative and deliberate. As this member aptly points out, activities can no longer be carried on with the hurrah which the war spirit permitted; on the contrary, the work must be done quietly, thoughtfully and earnestly. Insofar as the question of continuing new construction is concerned, the point at issue is whether the government or private parties should do the work. Nearly everyone is agreed that our merchant fleet will be none too large even when completed in accordance with the shipping board's program. Even with practically the entire world's carrying capacity now turned to peaceful pursuits, the demand for cargo space shows no signs of abating. As our charter market report on the following pages points out, foreign trade continues to expand, despite the dire forecasts of international bankers. Charter rates are strong and their continued enhancement is indicative of the enormous demand for tonnage throughout the world. Even if there were as many ships afloat as there were in 1914, the shortage under the changed conditions of commerce would be serious. In addition, it should not be forgotten that 2774 vessels, aggregating 9,538,000 tons, were destroyed in the war.

World Still Crying for Ships

The saturation point of ship construction is still far in the future. The world is still crying for ships, although as pointed out in these columns last month, this country is almost universally committed to the plan of getting the government out of industry as quickly as possible. Serious doubts, therefore, may be cast on the plan for continuing to build ships on a large scale with government money. This fact must be squarely faced by the reorganized shipping board.

At the same time, the need for the new liners, the construction of which has been recently announced in Washington, is perhaps even more keen than that for cargo tonnage. The loss of passenger vessels during the war was particularly severe and the existing lack of facilities cannot long be tolerated. Although less important from a revenue standpoint, adequate transoceanic passenger facilties are just as important in building up foreign trade as a fleet of cargo carriers.

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World Charter Market Reviewed b

WAGES ADVANCE

Heavy Operating Costs and Unusual Space Demands Tend to Keep Rates at a High Figure

ONE of the most significant developments in the shipping world last month was the creation of the American Ship & Commerce Corp., which has obtained a charter in Delaware. This corporation is the merger of the Kerr lines and the Cramps shipyards. The company has 1,500,000 shares of no stated par value, a part of which are to be syndicated at $40 a share. It obtains control of the noted shipyard of Cramps at Philadelphia and will direct the 50,000 deadweight tons of shipping in the Kerr fleet.

The board of directors of this combine posed of some distinguished Americans. Among them are Joseph W. Harriman, president of the Harriman National bank and senior partner in the firm of Harriman Co.; John L. Ogden, of F. B. Keech & Co.; Parmely W. Herrick, Cleveland, son of Myron T. Herrick, formerly United States ambassador to France; J. Leonard Replogle, president of the American Vanadium Co.; G. M. Dahl, vice president of the Chase National bank; P. M. Chandler, banker, and H. F. Kerr, president of the Kerr Steamship Co.

The Kerr line has obtained the services of some of the leading American agents of the old German steamship lines and it has appointed the Hamburg-American its German agents. The line has acquired the building and pier formerly owned by the Hamburg-American line at Antwerp, and has purchased the Hamburg-American building in Paris. This line intends to do an extensive freight business business and also speaks freely of establishing a passenger service to Europe within a few months. It is going directly for the German trade and hopes to take advantage of that business which has been lost to the German lines through the war.

Several New Lines Planned

The American merchant fleet now totals over 13,000,000 gross tons, but many of the vessels in this fleet are being sold off by the shipping board. A sale of 100 of the lake-type boats to French and Italian interests has already been announced. Belgian and other foreign interests are dickering for tonnage. The shipping board now has over 800 ships operating in 62 regular cargo routes to all parts of the world. The board has announced that it will allocate approximately 70,000 tons of ships to the German trade. These vessels will ply out of the ports of New York, Philadelphia, Baltimore, Boston, Galveston, New Orleans and other Atlantic and Gulf ports. It is planned to place these vessels on schedules, weekly, semimonthly, and monthly according to the demands of the business developed. At the same time, reports became current in the market that certain American banking houses have been purchasing up the stock of the Hamburg-American and the North German Lloyd with the intention of restoring these German lines in the world's trades.

The American lines have been finding it difficult to get in and out of German ports because there have been no American consular officers there to clear the ships. In this respect, the United States was far behind the other maritime powers who lost no time in restoring their consulates with the submission of the peace treaty.

The shipping board is also planning to encourage the South American business and to this end will allocate passenger ships. Four of the vessels which have been in the army transport service will be used. The board also plans to establish a regular refrigerator-steamer service to the River Plate. These vessels will triangle with Antwerp. The International Freighting Corp. is interesting itself greatly in the South American trade and is said to plan an extension of its services. While these extensions are being projected the Porto Ricans have been petitioning the shipping board for a fleet of 100 steamers to move the fruit crop. On the eve of a phenomenal growth, the shipping situation in general is confronted with adverse conditions. The striking seamen in American ports were successful in winning their advance in wages. Further to increase the cost of shipping, the price of bunker coal is said to be advancing.

Space Demands Are Heavy

The American line has inaugurated a new service between Boston and Liverpool. The Munson line plans a monthly service to Bahia, Blanca and Port Madrun. A. H. Bull & Co. have sent a steamer to Constantinople with the first full cargo to leave New York for the Turkish capital in five years. The Cameron lines plan to inaugurate a service from Baltimore to the east coast of South America. The Paragon Steamship Co. will establish a line from Boston to South America. The Forbes Corp. has initiated a service from Norfolk to Spain. The International Freighting Corp. has started a line from Philadelphia to Havre. The Gulf & Southern will re-establish its Tampa-New Orleans service at once, and the Red Cross line has resumed its weekly sailings between New York and Halifax and St. Johns. A. Frankel of New York has organized the Red Cloud Steamship Co. The departure of P. A. S. Franklin of the International Mercan-

Board Cuts Rates

TO meet foreign competition the shipping board announced Aug. 4 the following cut in rates from United States Atlantic and gulf ports to Montevideo and Buenos Aires:

All general cargo not otherwise specified, $25 ship's option. All condensed weight steel, $20 per 2240 pounds. Barb wire, $22.50 per 2240 pounds. Binder twine, 85c per bale for two-foot bales. Binder twine, 75c per bale for one-foot six bales. Cement, $18 per 2240 pounds. Hardwood, $50 per 1000 superficial feet. Softwood, $45 per 1000 superficial feet. Turpentine, $25 per 40 cubic feet. Naphtha and kerosene take the open market rate.

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Experts in This Country and Abroad

tile Marine for Europe recently initiated the report that negotiations will be resumed for the transfer of that company's ships to the American flag. The International Mercantile Marine expects to obtain a release of some of its British steamers from war service shortly and some of its interrupted services will be restored. The line, it is said, is anxious to obtain a proper entry into Antwerp. The White Star line has resumed its New York-Southampton services with the ADRIATIC. This line has also resumed its Boston to Italy service. The Anchor line has resumed its Boston to Glasgow sailings. Atlantic coast shipping interests view with alarm the invasion of the Atlantic trades by Japanese ships. Already ships of Suzuki & Co. are plying between New York and European ports.

The South African Trade Association of London has announced the revival of the shipping agreement between the conference lines and the merchants. The new proposed agreement leaves the merchants free to use whatever steamship service they choose in shipments from Italy, Portugal, and the Scandinavian countries, and binds them to give their entire support to the British shipping interests for all shipments from ports of the United Kingdom and of the continental coast from Bordeaux to Hamburg, inclusive.

Foreign Trade Expands

Foreign trade continues to expand, despite the dire forecasts of international bankers that Europe is rapidly approaching the day of payment. Charters have been commanding 40s, and available vessels are extremely scarce. Only one or two American vessels have been offered and they were said to have brought between $9 and $9.50 per month. Another American steamer is said to have brought $10. The former charters were on vessels to transport coal to Italy. This continued enhancement in charter hire is indicative of the enormous demand for tonnage throughout the world. The shipping strike, which visited American ports for two weeks last month, has resulted in wage advances all around, and now it is said that the Norwegians promise to give their seamen an 8-hour day. Higher costs of operation coupled with the demand for space will certainly check any further tendency toward lower ocean rates. A slight increase in the European rates has already been noted. Private operators from South Atlantic ports to Denmark, via Copenhagen, have been getting $1.57½ per 100 pounds or 88 cents a cubic foot, and to Sweden, via Stockholm, 1.82½ per 100 pounds or $1.02 per cubic foot. Trade with the east coast of South America dropped off slightly, although the basic freight of $25 a ton appeared to hold. A fixture was effected of a vessel from New York to a French Atlantic port for $27.50, and another at the same price to Spain.

The government released its control over charters, and with the return of requisitioned vessels a firmer market may be expected. Tonnage is well employed. In the River Plate trade 62s 6d per ton has been paid for wheat to United Kingdom, while some neutral vessels were taken for the continent on the basis of 250s to 260s. From the River Plate to New York, grain shippers have been offering $31.50. Only a few charters for grain shipments from the Northern Range have been taken. From St. Lawrence to United Kingdom ports grain charters have been taken at 10s per quarter. From the Northern Range to French Atlantic ports the price is $23, from Gulf to Havre it is $30, and $32 has been offered for Rotterdam. New York to Spain was closed for $29, while $30 was offered from the Gulf, with $53 to Genoa. Coal to Italy from the northern states ports was quoted at $26.50. Timber has held firm, with 380s reported paid from the St. Lawrence to the British channel, and $125 done from the Gulf and license refused. Offers of freight space as low as $15 to $16 per short tons for iron and steel goods were being made from the American ports to United Kingdom.

Brokerage Costs Increase

The government has been practically the only charterer of grain, although a boat was taken last month from New Orleans to London for barley at 22s on private account. The rates for heavy grain remain at 14s per quarter to France from the Northern Range, with 17s to Italy. Cotton has been crossing in American bottoms for $1.50 to $2.50 per 100 pounds, varying according to the loading port. Freight forwarders have been notified of the decision of the conference lines to pay 1¼ per cent brokerage on all contracts. This is an increase of ¼ per cent over the fee that has been allowed for several months past. Brokerage was regulated during the war, and when cargo rates were highest only ¾ per cent was allowed.

There has been a large movement of canned goods. A large proportion of these shipments have been going to United Kingdom ports. England has taken enormous quantities of American condensed milk since the first of the year. But the demand for cargo

Germans Buy Cotton

FOR the first time since the beginning of the world war in August, five years ago, a vessel is loading cotton at the port of Galveston, Tex., consigned to a German port. The shipping board steamer PAWNEE, however, will not be the first boat to go from Galveston to Hamburg with cargo since the signing of the peace treaty, as the steamer GULF OF MEXICO, which left Galveston in May with cotton destined for Trieste was diverted on the high seas for Hamburg. It is expected that there will for a time to come be a brisk movement in cotton for German consumption. Present indications are that the German cotton trade will develop rapidly.

SEEKS TRADE

Cramp and Kerr Interests Combine for Future Trade Expansion—Plan Passenger Service to Europe

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space is not due alone to the freight moving but there has been likewise an unprecedented passenger movement. English business men have been complaining bitterly over the scarcity of passenger accommodations and American travelers find it difficult to book passage. Nearly 7000 persons sailed from the port of New York in one week last month and many applicants for passage were disappointed.

Release Many Transports

The peak of the army movement has passed. From now on the transports will be returned rapidly to commercial services. The shipping board has released to its owners every ship it has under requisition. Only those in the hands of the war department are now withheld. Vessels released to the American-Hawaiian line include the SCRANTON (PENNSYLVANIA), MINNESOTAN, ALASKAN, FLORIDAN, MEXICAN and DAKOTAN. To the Southern Pacific has been released the CANANDAIGUA (EL SIGLO), HOUSATONIC (EL RIO), CANONICUS (EL CID), and ROANOKE (EL DIA). The Grace Steamship Co. has received back the SANTA BARBARA, and SANTA ANA. The Luckenbach line has got back the EDWARD LUCKENBACH and WALTER A. LUCKENBACH. The SANTA OLIVIA has been returned to the Atlantic & Pacific line, the SHOSHONE to the Shoshone Navigation Corp., DEEPWATER to Castner, Curran & Bullitt, the EVERETT to the New England Fuel & Transportation Co., and the TIGER to the Standard Transportation Co.

Orders are out for the return of the ANCON and the GENERAL GORGAS to the Panama Railroad Co., the TEXAN and the ARIZONAN to the American-Hawaiian line, the EDGAR F. LUCKENBACH, K. I. LUCKENBACH and the JULIA LUCKENBACH to the Luckenbach line, the PEERLESS to the Standard Transportation Co., the WILHELMINA to the Matson Steamship Co., the CALAMARES to the United Fruit Co., and the SANTA CECELIA to the Nafra line.

Deserts Pacific Trade

Abnormally high freight rates have induced the Japanese to turn their attention to the Oriental-European trade. Twenty-five steamers which recently were in the Seattle-Japan trade are now operating in the Oriental-European route via the Suez canal United Kingdom and Continental European markets are bare of commodities of all kinds and the big demand for many of the products of the Far East has sent ocean freight rates skyward. The diverting of the Japanese steamships from the transpacific trade to the United Kingdom and Continental Europe was to be expected, say Seattle shipping men, as the vessels were getting a rate of 48s between Seattle and the Orient. This rate also applies between the Orient and San Francisco and the Orient and Portland, and the Pacific is being swept clean of the big fleet of Japanese freighters formerly in this service.

Vessels of the leading Japanese shipping corporations which were plying more or less regularly in the transpacific trade are not only being diverted to Europe but also Japanese carriers which were operated on the Atlantic by the United States shipping board during the war. Released from government commandeer, these vessels were sent to the Pacific coast, where they loaded for Japan, but they have not returned to American ports as was expected, being placed in the European service, where higher rates are in effect.

The steamship KONGOSAN MARU of the fleet of Mitsui & Co., which recently loaded in Seattle for the Orient, will be diverted to the European trade as soon as she discharges in the Far East.

The steamships TSURUGISAN MARU and ATAGOSAN MARU of Mitsui & Co., which were in Seattle recently, are now plying regularly between ports in the Orient and the United Kingdom and Continental Europe via the Suez canal Seattle shipping men say that present conditions on the Seattle-Oriental route are only temporary, as rates on the Pacific will be stiffened by the scarcity of tonnage and vessels will be attracted to the Pacific coast from the Atlantic trade.

Another reason for the diverting of vessels from the transpacific route, according to Seattle shipping men, is the desire of the Japanese shipowners to establish trade relations with Germany, the Netherlands and other countries of Europe, the markets of which have been opened as a result of the end of the world war.

Pacific coast shippers have been laboring under serious disadvantages for the past few months, but it now looks as though the tide of adversity was going to turn. The railroad administration has maintained a rail rate from the interior to the west coast so high that it has been cheaper for shippers to send their goods to the Far East by way of New York and the Panama canal, and in spite of the vigorous opposition to this discrimination on the part of the western shippers, the administration has turned a deaf ear to all protests. But now comes the news that the tide will commence to turn. The export traffic to Pacific coast ports is to be amended so as to eliminate the present charges for demurrage and storage, and under the new arrangement wherever a shipper forwards his cargo in accordance with railroad permit, the demurrage or storage charges, if any, will be absorbed by either the railroad company or steamboat company.

Boston Trade is Heavy

Boston's export business has picked up materially since the strike of marine workers was settled but the situation for a period of nearly three weeks, so far as movement of American tonnage was concerned, was stagnant. Several ships loading for Great Britain were forced to stop working and consignments intended for ports in Europe piled up on piers as a result. When the situation looked blackest, from the standpoint of exporters, longshoremen at several of the big terminals went out because donkey hoisters on piers were being used to handle cargo. This strike, it was feared, would spread to freight handlers and other dock workers but the trouble luckily was averted by wise council on part of union officials. The strike resulted in stoppage of export goods almost completely where American tonnage was concerned and one or two lines refused to handle merchandise destined to points by water beyond New York as it was uncertain that the goods would be received. Rates do not show material change as compared with those of last month although it is expected in maritime circles that lower rates will come soon to stimulate foreign buyers. Rates on lumber from Boston to Argentine are quoted at $50 per 1000 while the prewar figures were in vicinity of $9. Lumber rates to Brazilian ports maintain a high level as well as rates to the West Indies though shipments of lumber to Havana as a rule are relatively light.

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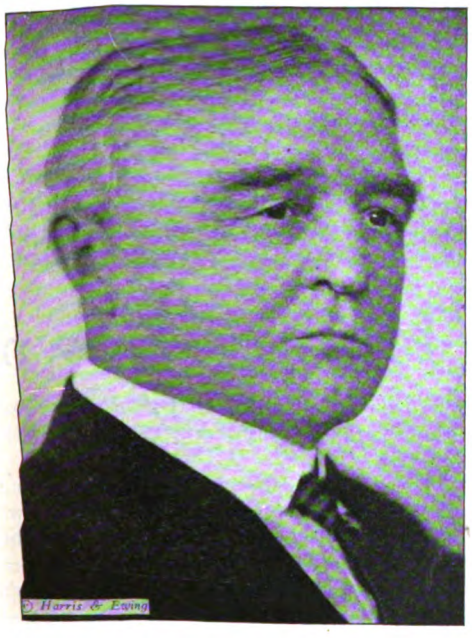
U.S. Shipping Board Reorganized

Resignation of Chairman Hurley and Appointment of Three New Men Presages Important Changes in Policy—Many Problems to Solve

BY M. L. FEISER

WITH the passing of Edward N. Hurley as chairman of the United States shipping board, the coming in of John Barton Payne as his successor, and the arrival of two new men to fill vacancies created by other resignations, the question naturally arises as to what will be the future policy of the board? A definite answer cannot be given at present, but a brief study of the situation might, however, give some idea of the trend which future policy may take. The senate



JOHN BARTON PAYNE
New Chairman of the United States Shipping Board

committee in charge of the nominations of Judge Payne and the other new members of the United States shipping board returned favorable reports soon after the names had been presented and shortly afterward the new members received the full approval of the senate.

Chairman Hurley left the board two years and four days after he took office following the unfortunate Goethals-Denman controversy which almost wrecked the emergency fleet project before it had started. What Mr. Hurley and the board associated with him and what the board's subsidiary, the Emergency Fleet corporation, accomplished during those two years is known internationally. It was chiefly a period in which every effort was bent toward building ships. Operation, of course, and yard management were big questions, but of late disposition of yards and ships have become a problem almost as great as that of operation. Before leaving, Mr. Hurley sent to congress his conception of the policy the government should adopt to encourage the establishment and development of the American merchant marine; this policy is well known to shipbuilders, ship owners and ship operators.

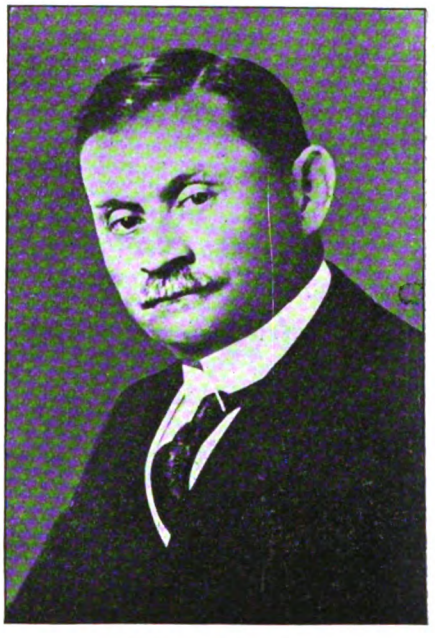
Problems Loom Large

To the incoming shipping administration the question of construction is practically settled. There is no longer the urgent need for ships that prevailed throughout the early and major part of Mr. Hurley's incumbency and while some big questions in connection with the "balancing of the fleet" remain to be solved, the main points demanding the attention of the reorganized board include those of operation and management of the ships built and building, the disposition of those for which the government sees little need now and putting into effect of the government's own policy as to the control of shipping.

It is these and other questions the new administration will have to answer, in addition to explaining some of the mistakes the Hurley administration made. Congress is already prepared to find out about the mistakes, but congress, the people, the board, everyone is more or less at sea. Because of this indefiniteness of things it might be well to look into the personnel of the board and from that get an idea of what may be expected.

Starting off with the old members of the board, R. B. Stevens and John A. Donald, it may be pointed out that Mr. Stevens is the only original member of the board as it was first constituted under Chairman Denman. Mr. Stevens is familiar with practically all phases of the shipping board's and the Fleet corporation's problems, has especially been concerned with labor and is more or less familiar with international shipping matters, having for many months been the American member of the allied maritime transport council. The shipbuilding and shipping industry is more or less familiar with his activities as it is also with those of Mr. Donald. Mr. Donald, owner and operator, has had much to do with the operations end of the industry during his membership in the board. His peculiar experience in this line of work permits him to stand almost alone in the board.

Another member of the board who is an authority on international shipping matters and who also is familiar with labor problems, is Henry M. Robison, who has been named to succeed Charles R. Page. Primarily an attorney, Mr. Robinson has been so closely identified with business and industrial matters that he was one of the special American advisers at the peace conference. He prepared shipping facts for the American



EDWARD N. HURLEY
Retiring Chairman United States Shipping Board

delegation and prior to going to Europe and since his return had been assistant to Mr. Hurley on subjects pertaining to foreign trade.

A fourth member of the board is Thomas A. Scott, a practical marine engineer who, during the war, was in charge of the navy's salvage operations. The disposition of surplus materials, of yards, of ships, etc., and the construction of necessary equipment and vessels for balancing the fleet will require the special service of a man of Mr. Scott's profession and his experience in private life in New England maritime matters and in the government's service during the war gives him a fitness for the work held by no other member of the board.

Mr. Scott is president of the T. A. Scott Towing, Pile Driving & Wharf

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Building Co., New London, Conn. He is also the head of the Scott Investment Co. of New London. He was born in New London Oct. 10, 1877, and was educated in the Mystic Valley English and Classical institute. His father, also Thomas A. Scott, was a deep sea diver and Scott the younger is said to be one of the best in the business. He has been the head of the Scott marine business since May 1, 1903, and in his work had charge of the construction of shipyard piers at Groton, Bridgeport and other New England ports and also the state pier at New London. From Jan. 31, 1918, he served under Rear Admiral D. W. Taylor, chief of the navy's construction and repair bureau, and has been recommended for promotion to the rank of commander.

Trained in business law and having handled the most difficult problems of the railroad administration and of the shipping board itself, John Barton Payne, Mr. Hurley's successor, is to correlate the activities and functions of the other commissioners and, with them, round out the individual and general policies to be settled. Working with him in this connection will be Mark Hyman, who followed Sherman L. Whipple, who was Mr. Payne's successor as general counsel of the shipping board. Since he left the shipping board as counsel in March last year the new chairman has been general counsel of the railroad administration and chief of its division of law. His fitness for this place was determined by years of service as attorney for several of the railroads in Chicago. He was counsel also for other corporations, his experience mainly having been linking up law with business, giving him a double viewpoint which now may be called triple, since he has the government angle on many business and legal situations. Judge Payne was born in Prunytown, Va., Jan. 26, 1855, and was admitted to the bar in West Virginia in 1876.

Policy Will Be Constructive

As an official of the board recently stated, the policy of the reorganized board will not be framed, but will evolve, and it will be constructive, conservative and deliberate. Activities can no longer be carried on with the hurrah which the war spirit permitted, but the work must be done quietly and thoughtfully. At some time or another, many of the present functions of the board will have to be terminated and it has been said the new personnel is of the character that should have little trouble in bringing them to a close.

Erect Office Building

The Cunard Steamship Co., Ltd., is to erect in New York city on the plot bounded by Broadway, Morris and Greenwich streets a huge 21-story office building. This structure will be named the Cunard building. It will house on its first three floors and in its basement the offices of the American interests of the Cunard line and the affiliated interests of the Anchor line, Anchor-Donaldson line, and others.

The acquisition of the land involved an expenditure of almost $5,000,000, and it is believed that nearly twice that sum will be expended upon the building. The base area will be 48,400 square feet, but 2000 square feet less than that of the Equitable building in New York. Of the 700,000 square feet of floor space the steamship companies will consume less than a third, enabling over two-thirds of the building to be thrown open to other tenants. Plans for the building are entirely completed and operations are already under way. It will be ready for occupancy by May 1, 1921.

The schooner ELEANOR F. BARTHAM bound from Pernambuco to Norfolk, Va., via Barbados, went ashore on the coast of Brazil. She has been refloated.

Tug Sandusky Dislikes Her Home Town

THE Great Lakes Towing Co.'s tug SANDUSKY, which vessel was put in commission and assigned to service at Huron, O., for the 1919 season, is causing some comment.

The SANDUSKY was built for harbor work at Sandusky, O., but some sort of a hoodoo seems to pursue here whenever she is in the port from which she derives her name. This is believed to be the reason why she has been shifted about from place to place of late years even though the officials of the owning concern refuse to admit it.

Soon after the SANDUSKY was built, commissioned and started on her career she began to figure in mishaps of one kind or another. It seemed that there were always breaks to be repaired, that each day had a close call in store or that something else happened to make being on her uncomfortable as well as risky.

Then came the turning point. One night she went forth to pick up a tow. On the way out of Sandusky bay she was struck by an incoming freighter and completely submerged. It was pitch dark. However her captain, Jesse Brooks, Norwalk, O., with one member of his crew, were saved. Two others, both seamen, were drowned.

The SANDUSKY was under water for several days. Finally she was raised, towed to a drydock where she was overhauled and, after she had received needed attention, was recommissioned.

Away from Sandusky harbor, she seems to get along all right; in fact she is one of the best behaved tugs in the Great Lakes section.

SANDUSKY HARBOR SPELLS TROUBLE FOR THIS TUG—ANYWHERE ELSE SHE BEHAVES ALL RIGHT

The Lumber Carriers' association of the Great Lakes has issued its membership list for the current year, together with agreements with labor organizations. As in previous editions the list contains much valuable information pertaining to lake maritime affairs, list of the association's officers, vessels, owners, copies of contracts, etc. Great Lakes, sailing distances and weights of different woods in board measure are also included.

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New Type American Freighters

Giant Cargo Boats Constructed for The Luckenbach Line—Large Vessels Designed for Norwegian Interests Commandeered—Fleet is Held Under American Flag

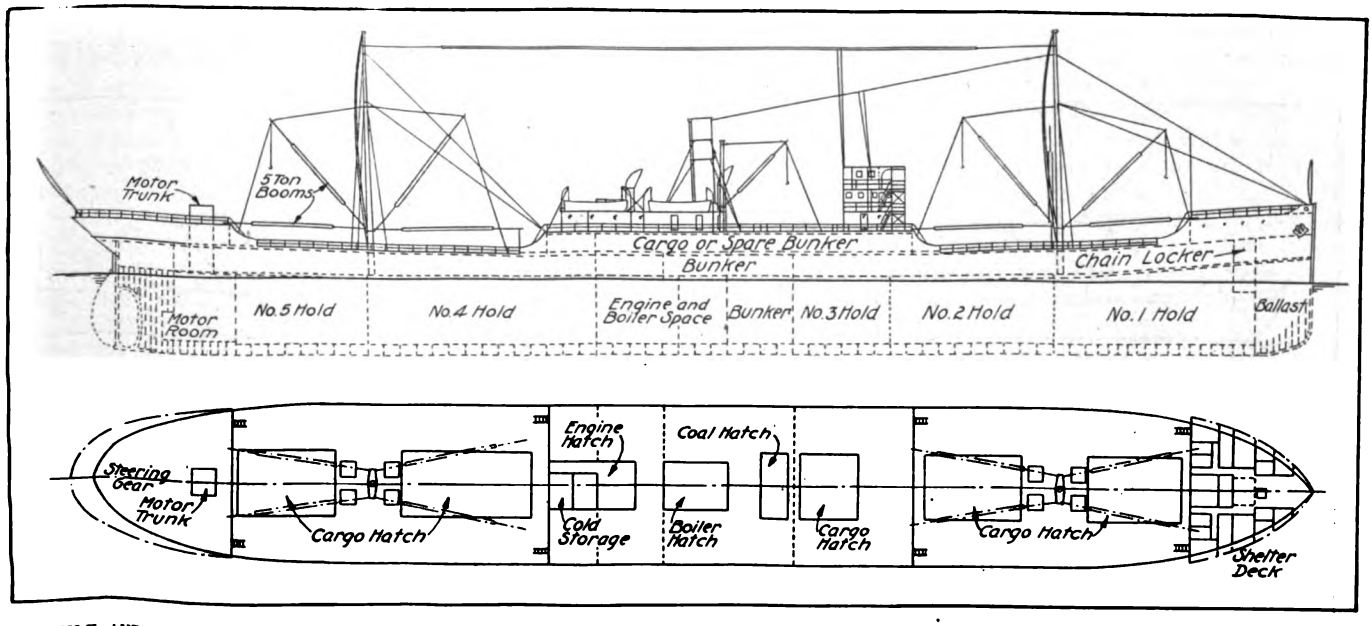
SOME large vessels came into the possession of the Emergency Fleet corporation through the order issued in 1918 commandeering all ships in the course of construction and all contracts held by American shipyards. It was actually through commandeering that the government therefore came into the possession of large ships as the contract plans did not call for the construction of such vessels. The largest of the contract ships, as described in the July issue of MARINE REVIEW, was the 13,000-ton troopship WENATCHEE, one of 13. Now that the troop ships have been altered into combination boats for regular merchant marine service they will hold the record for war-time construction by the government.

Some of the more aggressive shipping lines have contended that larger vessels should be built and, urged by the war necessity, the Luckenbach line actually let contracts for the building of some of the largest cargo carriers ever designed to fly the American flag. Many of the large Luckenbachers were turned over to their owners and ultimately taken and used in the transport service. This line, however, had let contracts with the Sun Shipbuilding Co., Chester, Pa., for four large cargo steamers which contracts were commandeered by the shipping board. The largest of the cargo steamers planned by the Luckenbach line were built by the Bethlehem Shipbuilding Corp. at the Fore River plant, Quincy, Mass. The plans for these were especially designed for the Luckenbach line. They are 14,000 deadweight tons. There was to be two of these, sister ships. The shipping board commandeered both contracts, made four alterations in the plans, and has just recently accepted delivery of the vessels through the Emergency Fleet corporation.

The Luckenbach steamers which came into the possession of the government through commandeering proceedings are known as the LEWIS LUCKENBACH and the ANDREA F. LUCKENBACH. While the Luckenbach line has not disclosed the trade these steamers were intended for, it is naturally presumed that they were designed for the Australian. The larger vessels, capable of carrying a greater bulk of freight upon each voyage, were excellently designed for long voyages. They are steel, twin screw, shelter deck, general freight carrying ships, with straight stem and modified cruiser stern. Their machinery is amidships. Each vessel has one telescopic mast for wireless located aft and as near the stack as practicable. They are divided into four large cargo holds, two aft and two forward of the machinery space and forward and after peak. Each hold has two hatchways.

Both Luckenbachers were built to the highest classification. Their length overall is 527 feet 6 inches, and length between perpendiculars is 496 feet. Their molded breadth is 68 feet, molded depth to shelter deck, 40 feet; molded depth to second deck 26 .feet 6 inches, and the designed draft is 28 feet 8 inches. Robert Dollar has also held, in accord with Mr. Luckenbach, that the American cargo steamer of the future should be much larger than the general type of cargo boat designed for the Emergency Fleet corporation during the war. The shipping board concentrated on vessels around 5000 deadweight tons, whereas Captain Dollar insisted that a cargo steamer should be at least 10,000 deadweight tons in size to make her operation under the American flag economical.

The giant Luckenbach freighters have been built with a modified transverse framing. They have 42-inch frame spacing amidship. The side stringers have been omitted and the shell compensated to give the necessary strength. There are 12 hinged kingposts, six on each side of the hatches, making those between frames able to support a 30-ton derrick. Steps to take these were fitted on the aft side of forward kingposts and forward of aft kingposts. Georgia pine booms, 24 in number, for a working capacity of 5 tons and one 30-ton boom built up of steel were installed to handle cargo.



PROFILE AND SHELTER DECK PLAN OF THE ABRAHAM LINCOLN—THIS VESSEL WAS BUILT BY THE PUSEY & JONES CO. AND HAS A DEADWEIGHT TONNAGE OF 12,500

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The 24 cargo winches include four which are compound geared. The winches are of the double-cylinder, single-drum type, with drum keyed to the shaft, without brake band and fitted with reverse valve. The cylinders of these winches are 8½ x 10 inches with 20-inch diameter drum. The single geared winches are capable of lifting 5000 pounds on a single whip at an engine speed not exceeding 125 revolutions per minute, speed of hoist not less than 300 feet per minute, with a steam pressure of 125 pounds. The compound geared winches are capable of lifting 10,000 pounds on a single whip at an engine speed not exceeding 125 revolutions per minute.

The windlass has wildcats suitable for 2¾ inches stud link chain cable, with large 27-inch diameter warping drum ends. The windlass is driven by double-cylinder type engine through a steel worm. These cylinders are 14 x 12 inches. The working steam pressure is 125 pounds. Each ship is equipped with two stockless bower anchors of 12,005 pounds each, one stockless bower anchor of 10,220 pounds, one stockless stream anchor of 4035 pounds, one stockless ledge anchor of 1820 pounds, and 300 fathoms of stud link chain cable. Each carries 105 fathoms of 5½-inch galvanized steel wire stream line, 140 fathoms of 5½-inch circular galvanized steel wire tow line, one 9-inch manila hawser 90 fathoms long and two 8-inch manila warps 90 fathoms long each.

The propelling machinery drives twin screws and each set consists of a high pressure and low pressure turbine, driving a propeller through a single reduction gear. The steam, at 300 pounds working pressure, superheat about 100 Fahr. at the boiler, is furnished by four water-tube marine boilers fitted with superheaters and equipped complete with forced draft system. The designed horsepower is 2500 per set at 110 revolutions per minute propeller speed.

The thrust, tunnel and propeller shafts are of forged steel with collars and coupling flanges made integral. The tail shafts are 13⅝ inches in diameter and have continuous composition sleeves shrunk on to bear in the stern tubes and bracket bearings. The thrust bearings are attached to the forward end of the reduction gear shafts, the housings being direct connected to the reduction gear casings. The propellers are of the solid type, three bladed, made of manganese bronze.

Equipment is Complete

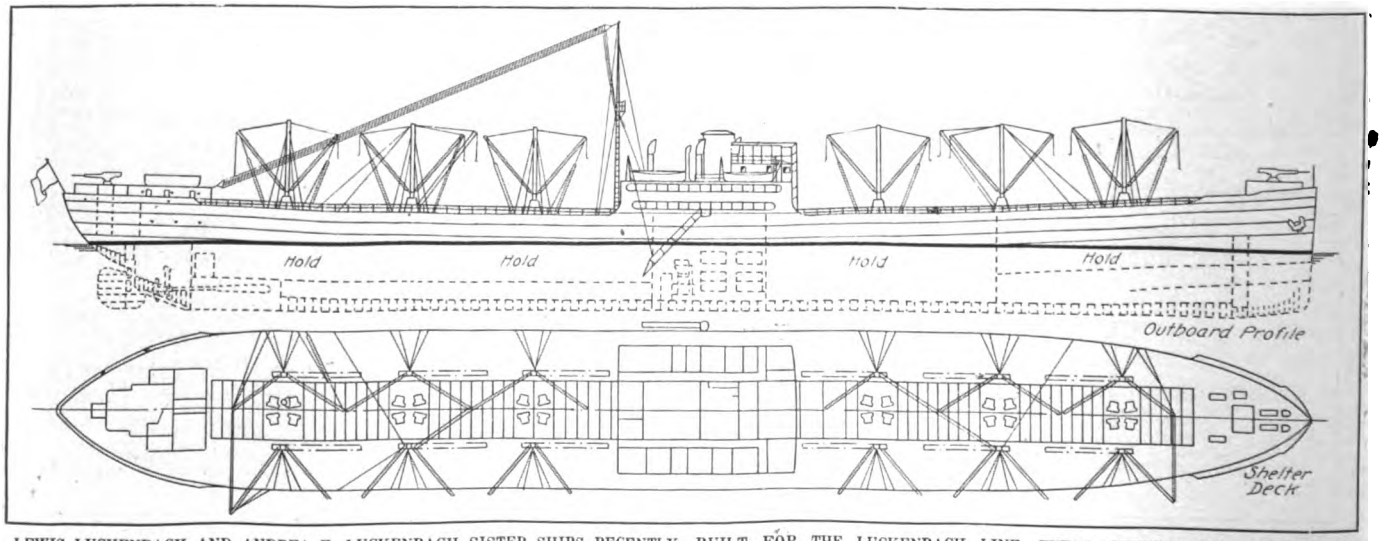
The auxiliary machinery equipment is complete. The air pump system consists of the rotary turbine driven condensate pump and an air ejector, having an independent set for each engine. The condensers are of the surface type, one to each engine, having about 4000 square feet of cooling surface, designed to maintain a vacuum of 91½ per cent with circulating water at 84 degrees. The tubes are ¾-inch outside diameter, No. 17 Birmingham wire gage brass, tinned inside and out. The boilers have 3620 square feet of heating surface, designed for a working pressure of 300 pounds per square inch. They are arranged for burning fuel oil, each boiler being fitted with three burners. The machine shop is equipped with one lathe, one drill press, grinder with counter shafting, pulleys, etc., power being derived from a 7½-horsepower motor. There are two 1-ton refrigerating machines installed complete. The vessels have a mechanical oil fuel system. A complete electrical plant has been installed, consisting of two 20-kilowatt, 115-volt direct-connected marine generating sets with a combined generating and distributing switchboard.

The war emergency had passed by the time these vessels were delivered. They have, therefore, been turned over to the Luckenbach line. The LEWIS LUCKENBACH was delivered to her owners in May and the ANDREA F. LUCKENBACH was returned during June. The return of these vessels, together with the release from requisition of the other large ships which the Luckenbach line has come into possession of since the beginning of the war, is building up a cargo fleet of tremendous power under private ownership and management and under the American flag.

Several other large cargo steamers of 12,500 deadweight tons also came into the possession of the Emergency Fleet corporation by commandeering proceedings. The contracts for these steamers were originally let by Norwegian interests with the Pennsylvania yard of the Pusey & Jones Co., Gloucester City, N. J. The first completed was named the INDIANAPOLIS. The HENRY CLAY and the ABRAHAM LINCOLN are sister ships. There are three others in the course of construction. The displacement of these vessels is 16,900 tons, and the deadweight is 12,500 tons. The length overall is 455 feet, between perpendiculars 439 feet 6 inches, beam molded 60 feet, depth molded to shelter deck 36 feet 8 inches, and height of 'tween decks molded 9 feet 6 inches. The vessel carries not less than 12,500 tons deadweight on mean keel draft of 28 feet 3 inches.

These vessels are single screw, electrically driven, cargo steamers built on:

(*Concluded on page* 437)



LEWIS LUCKENBACH AND ANDREA F. LUCKENBACH SISTER SHIPS RECENTLY BUILT FOR THE LUCKENBACH LINE—THESE VESSELS ARE CAPABLE OF MAKING LONG VOYAGES

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France Protects Motor Industry

Blow to the Importation of Marine Motors is Seen in the 70 Per Cent Ad Valorem Duty Still in Force

BY FRANCIS MILTOUN
Staff Correspondent of The Marine Review

RECENT French decrees abolishing import restrictions to a large part is not proving wholly a blessing in disguise. The foreign automobile manufacturer has found this out when he learned that the war duties of 70 per cent ad valorem were to still be maintained. This applies to marine motors also.

The new decree is wholly in favor of protection of French industry, but at the present time there is no French industry to protect along many lines, and the home market that exists is so potentially great that France will not be able to catch up with it unaided for months, perhaps years. This is the situation as it is with respect to marine motors, as it is to shipbuilding, as it is to the automobile industry, and many others.

The decree provides for a supertax on certain manufactured products, among them heavy duty oil motors. The customs tariff levies the approximate equivalent of $4 per 220 pounds on, say, a motor of 200 horsepower weighing 16,280 pounds, a sum equaling $296. This is only the base. The point is argued by experts, though the matter is manifestly not clear, that whereas the motor of former times was valued at $8000 it is now quoted, and invoiced at $20,000, two and a half times the former price, and that under the supertax provided by the decree, based on ad valorem, the duty will be levied at two and a half times the former, or $740. This seems plausible, but another ruling of the government department concerned says no: that the supertax will be levied on the minimum tariff basis of 15 per cent of the $20,000, which is $3000., to which must be added the specific duty of $296, making the entire duty $3296.

M. Loucher, minister of reconstruction, recently recommended to the French tariff commission to lower the duty on heavy oils so that they might be used for motive force in engines on sea and land with a view to economizing coal supplies. With cheap heavy oil motors, at least motors which were not over burdened with a tariff tax, the power boat for fishing and freight transport on the excellent system of canals and waterways would go far to reduce the cost of living in France. The motor is needed on land and sea in France, and not being able to meet the need with her own manufactures what more natural than that she should turn to a friendly nation for them. It is either that or to Germany, and the mark is less than 40 per cent of par while the dollar is at 18 per cent premium.

Builds Large Motorship

The large motor vessel ANSALDO SAN GIORGIO I recently arrived at Glasgow, Scotland, after a maiden voyage from Genoa, Italy, via Carthagena, Spain, with a cargo of 7600 tons of iron ore.

Revives Shipbuilding

WITH the launching of the APOSTLE ANDREW, a wooden schooner of 230 tons, shipbuilding on the island of Cyprus is being revived. The vessel was built at Kyrenia, on the north shore of the island. This vessel is the second to be built at this place in modern times. The other vessel was a small schooner built some 35 years ago.

In the earliest days of the shipbuilding industry, the island of Cyprus was covered with forests of wood, well adapted for the shipbuilder's needs and its coast contained a number of shipyards where vessels for the Greek Mediterranean trade were constructed. At that time, the inhabitants of the island developed a high degree of skill, for that early date, in shipbuilding.

In the year 480 B. C., when Xerxes was busy carrying on a war with the Greeks, the inhabitants of Cyprus built and manned 270 ships which comprised Xerxes' navy. At that early date the art of sailing was in its infancy. These vessels carried but one square sail, rigged on a yard, and as they could not lay within eight points of the wind at best, in emergency they were propelled by oars.

The voyage was successful, for, although heavy weather was experienced, the machinery worked smoothly and steadily and a good uniform speed was maintained.

The ANSALDO SAN GIORGIO I is a twin-screw vessel, 393.11 feet over all, 51.9 feet beam, 24.6 feet loaded draft, of 8100 tons deadweight and 5663 tons gross. She was built at the Ansaldo San Giorgio yard at Spezia, Italy, and was supplied with machinery by the Ansaldo San Giorgio, Turin. Her owners are the Società Nazionale di Navigazione, Genoa.

The engines of the ANSALDO SAN GIORGIO I are twin screw, of 2220 brake horsepower, and are placed well aft, so as to leave a large clear cargo hold, free of stanchions and with eight transverse watertight bulkheads. The machinery consists of two single-acting, 2-cycle diesel engines, having four cylinders 24 13/16-inch bore x 35 7/16-inch stroke, reversible type. All the auxiliary machinery, driven by the main engines, is operated from the forward continuation of the crankshaft. A complete set of manometers and other controlling apparatus for the operation of the main and auxiliary machinery and for starting and reversing the engines is installed. All can be operated from the central engineroom platform. Two oil-fired vertical boilers are provided for the auxiliaries.

The fuel consumption of the main engines is not more than 0.43 pound per brake horsepower hour, and with 250 tons of fuel on board the vessel can run a distance of 7150 miles fully loaded at a speed of 11 knots.

Test Turbine Engines

Successful trials were run on the Mersey by the new steamer AMARNA, belonging to the Moss Steamship Company, Ltd., Liverpool, which has been built at Londonderry by the North of Ireland Shipbuilding Co., Ltd. The AMARNA is a sister ship to the ASSIOUT, recently delivered to the same owner. These are the first vessels to be fitted, for propulsive purposes, with the Westinghouse-Rateau turbine.

After the ASSIOUT and the AMARNA had been laid down in 1917, it was found that owing to the ever increasing requirements of the admiralty for naval machinery, the triple-expansion engines originally intended for these vessels could not be ready in time and that substitute machinery of the same type could not be obtained from any marine engine builder in the British isles. It was, therefore, determined to fit the Westinghous turbine, and this experi-

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ment is reported to have turned out to be a success.

The ASSIOUT has already made two voyages to the Mediterranean and back. The boilers are fitted with superheaters and forced draft. There are two turbines, high and low pressure, driving the propeller shaft through double reduction gears. A considerable saving in the weight of machinery is shown. The performance of these vessels as pioneers in this form of turbine will be watched with interest. On her trials the AMARNA attained a speed of 12 knots an hour.

Orders Fishing Vessels

The Fishery Supply Co., Ltd., Berlin, has given orders for many hundreds of fishing vessels and motors, to a large number of German wharves and motor works, which will partly compensate them for loss of government war contracts. The motors are being standardized to the exclusion of costly and unsuitable models. and a new coasting motor boat is being made, suitable for production in quantity. The fishing boats have also been standardized. Numerous airplane concerns, which, by the stoppage of war orders, were without work, have by this means received profitable employment. Two types of boats for the Baltic and one for the North sea are projected, also a special kind of coasting boat. The fishing vessels and motor boats will be offered to fishermen in a small way at cheap rates by the Fishery Supply Co., purely as a matter of public utility. (*Kölnische Zeitung.*)

German Waterways

The members of the chamber of commerce in Halle recently discussed the various routes which could be taken by the new Mittelland canal and came to the conclusion that the southern route would be the most suitable for the best interests of the district.

They strongly emphasized the great importance of continuing the Mittelland canal as far as the Elbe, in whichever direction the government considers best, and urged that the work should be undertaken at the earliest possible moment.

They also considered a suggestion for the deepening of the Saale to enable 600-ton vessels to navigate from the estuary right up to the junction of the Saale and the Leipzig-Elster-Saale canal near Creplan. The suggested scheme would also reduce the length of this route by 111 kilometers through straightening out several of the longer bends. There would be 13 locks capable of taking vessels of from 600 to 1000 tons. The cost involved is estimated on a prewar rate basis as about 37,500,000 marks. (*Zeitschrift des Vereines Deutscher Eisenbahnverwaltungen*).

Japanese Shipbuilding

The department of communications forecasts that the vessels of over 1000 tons gross built this year in Japan will number 107, totaling about 600,000 tons. This includes about 200,000 tons of shipping to be built for the United States. The construction of these vessels and of those ordered by old established companies will be proceeded with as originally arranged, but there is considerable doubt as to the construction of other vessels. Shipping concerns ordered steamers in anticipation of a continued boom in shipping, but the conclusion of the armistice resulted in a heavy slump in the market.

In view of the consequent drop in the value of tonnage, some shipping concerns are now desirous of getting rid of the orders given to shipyards, and various pretexts are advanced by them to cancel the contracts or to secure a reduction in the price of the vessels. During the war boom many shipyards constructed steamers on their own account in order to sell them at favorable prices, but it is thought that this practice will be suspended until the market settles.

Chart Arctic Harbors

The Siberian ministry of marine recently issued orders regarding the lighthouse and pilot system in the North Arctic ocean. Hydrographic examination of the mouths of the Ob and Yenisei rivers is to take place, beacons and lighthouses will be erected, and buoys provided. In the bay at the mouth of the Ob a commercial harbor capable of handling approximately 500,000 tons of merchandise will be constructed. (*Hamburgischer Correspondent.*)

New Harbor at Hirtshals

The flat bay on the northwest coast of Jutland, south of the Skaw, is known as the bay of misery, owing to the large number of shipwrecks caused by the shallow water and frequent northwesterly gales. Sailing vessels are quite helpless, and the coast is dotted with wrecks which are gradually sinking into the sand.

At Hirtshals, a natural reef projecting northward forms a landing place for fishing vessels, and a 900-foot breakwater from north to south has been gradually built from 1879 to 1900.

The breakwater, being exposed to severe and frequent storms, was constructed of cases of heavy planks floated into position and sunk by filling them with concrete. The cases close to the shore were 20 feet long and contained 92 cubic yards of concrete. These were, however, found of insufficient strength to resist the force of the waves farther out, and the length was increased to 26 feet with a capacity of 176 cubic yards. The force of the waves moved cases even of this size, and partly destroyed the sides if a gale occurred before they were completely filled. Normally the concrete had ample time to set before the woodwork was destroyed, heavy stones being placed at the sides for protection. The breakwater was completed in 1900, and has therefore resisted the ravages of gales during 18 years, but specimens of the planks show that these have not proved immune against teredos and pile worms. (*Ingeniören.*)

Will Build 45 Ships

The Canadian government has decided to place a sufficient number of orders for steel ships to keep the shipyards busy during the present year and probably on into 1920. C. C. Ballantyne, minister of marine, recently announced in the house of commons that contracts for 45 steel ships, with a total net tonnage of 264,050 tons, had been let, and that in deciding not to discontinue the building of vessels, the government had been influenced by the great demand for ocean tonnage, by the fact that it could, if it desired dispose of its ships and by the inadvisability of throwing out of employment men now engaged in the shipyards and allied industries.

"It is not the intention of the government," Mr. Ballantyne said, "to abandon its shipbuilding program now. We are going to order additional ships at least to keep the yards requiring business busy for the balance of 1919 and probably into 1920."

Of the 45 ships, 25 will be completed this year. The government vessels are costing from $180 to $215 a ton, as compared with $150 a ton paid in England. Mr. Ballantyne pointed out, however, that France was constructing 30 wooden ships in Canada at $200 a ton, and that he had received from New York an offer of $190 a ton for the steamers built for the Canadian government.

According to *Norges Handelstidende* the plans for the construction of a large harbor on the north side of Uleaborg are now complete. The new harbor will be a center for the exchange of commodities with north Finland, and will be of great importance when the Nurmes - Vaala - Uleaborg railway is finished.

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Equipped Nine Refrigerator Ships

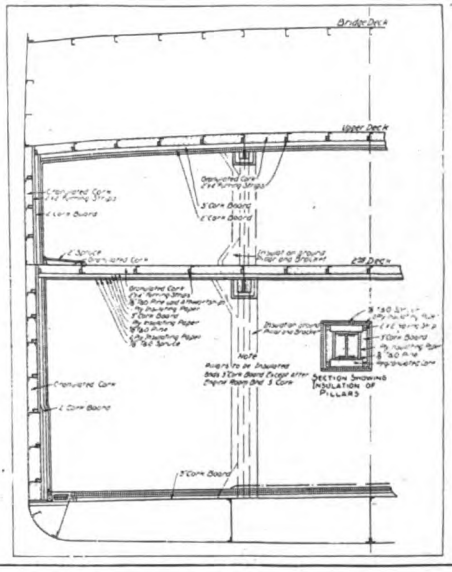
For Transporting Frozen Meat to France Nine Ships Were Commandeered and Fitted Out With Insulating Material and Cooling Coils

TO transport huge quantities of food overseas to feed the troops on the fighting lines of France was one of the vital problems that confronted the country in the early days of the war. At the outbreak of the war on Germany, the Baltimore Dry Docks & Shipbuilding Co., Baltimore, was building 10 vessels for private owners, of about 6400 deadweight tons each. These vessels were 340 feet long, 49-foot beam and had a depth of 28 feet 6 inches. They were promptly requisitioned by the shipping board. These ships were originally designed to be used for general cargo, but in view of the urgent need for refrigerator vessels to carry frozen meat to France, the company was directed to equip nine of them with refrigerating machinery and to insulate the cargo holds in order that refrigerated cargoes could be carried in them.

In this refrigeration system ammonia gas is compressed and pumped through ammonia pipes to the condensers. Here the gas is cooled by water, which circulates around the pipes. This ammonia gas is then forced through pipes to the brine coolers where it has plenty of room to expand, after which it is returned to the ammonia condensers. Brine is made of a saturated solution of salt, which will not freeze until it reaches a temperature of about 50 degrees below zero. The expansion of the gas is, of course, a cooling process and it is this expansion which absorbs heat from the brine until it is reduced to a temperature of zero, Fahr., or possibly lower. The cold brine is pumped from the brine coolers to the different parts of the ship through a large system of 1¼-inch brine cooling coils. These coils are fitted in different circuits all over the sides, bulkheads and under the decks and cargo holds of the ship. In all there are about 73,000 lineal feet, or between 13 and 14 miles of cooling coils on one vessel.

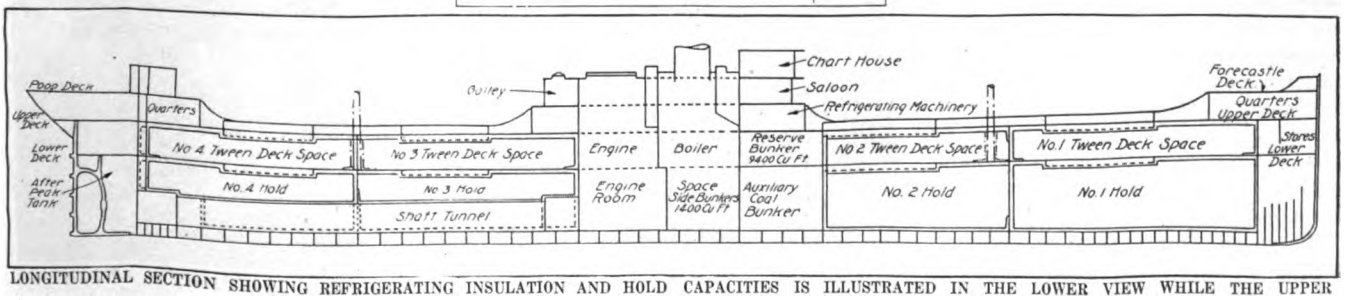
In order that a uniformly low temperature could be maintained at all times and to prevent the escape of the cold air generated by the refrigerating apparatus, it was necessary to insulate all cargo hatches, decks, etc. The fact that the nine vessels to be refrigerated were built on the longitudinal system of framing made it rather difficult to fit the insulation. The holds were insulated with granulated and sheet cork, which experience has shown to be an excellent material for marine insulation work.

On these vessels the sides of the ships were insulated by bolting frame strips to and flush with the channel frames, then applying a course of ⅞-inch tongue and grooved pine and filling the space between the pine and the ship's shell plating with granulated cork, well packed in between the longitudinal channels. To the face of the sheathing was applied one layer of insulated paper and two layers of 2-inch cork-board; then one course of ⅞-inch pine and a finishing course of ⅞-inch spruce, with two layers of paper between. This made the total thickness of insulation on the sides of the ship of from 15 to 18 inches. The decks and bulkheads were insulated in a similar manner, except that on the lower deck one layer of 3-inch corkboard was fitted instead of two layers of 2-inch. The tank top was insulated by laying grounds on it and then a layer of ⅞-inch pine with a 2-inch and 3-inch layer of sheet cork, together with insulating paper between and on top of the layers. Another layer of pine was placed on top of this, then two layers of insulating paper, and the finishing layer of spruce. Portable insulated hatch covers were fitted in the hatchways of the upper and lower decks in sections approximately four inches wide. These portable hatches were made of hardwood framing and were insulated with about 6 inches of corkboard, sealed on top and bottom with one layer of ⅞-inch pine, one layer of ⅞-inch spruce and two layers of paper between.



The hatch coamings were fitted with hardwood wedge-shaped timbers, faced with ⅜-inch galvanized steel as a protection against damage in handling cargo. Ventilators for the cargo holds and 'tween decks were fitted with insulated plugs, so that while the vessel was carrying refrigerated cargo, the ventilators could be entirely removed, and while carrying general cargo on the return trip the insulating plug could be taken out, the ventilator cowls put in place and the holds properly ventilated.

The specification requirements were that when the job was completed and ready for test the machinery be run continuously for 24 hours, during which time the refrigerated spaces should be reduced to a temperature of 15 degrees Fahr. Upon actual test, the temperature in the holds was brought down to between 5 and 6 degrees Fahr. and on one of the



LONGITUDINAL SECTION SHOWING REFRIGERATING INSULATION AND HOLD CAPACITIES IS ILLUSTRATED IN THE LOWER VIEW WHILE THE UPPER ILLUSTRATION IS A MIDSHIP SECTION SHOWING HOW THE INSULATION WAS APPLIED

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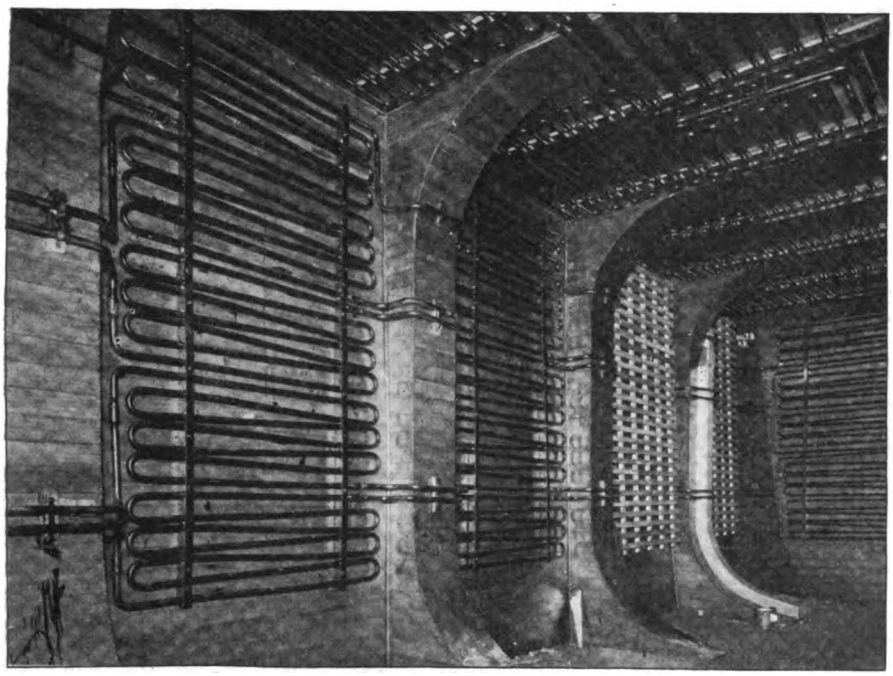


ADEQUATE INSULATION REQUIRES EXTENSIVE WOODWORK AND MILES OF PIPING—THIS VIEW SHOWS ONE OF THE LOWER HOLDS WITH WALL COILS AND CONNECTIONS

ships, which was fitted with a carbon dioxide instead of ammonia machine, the cargo holds had a temperature of about 1 degree above zero, while the brine was going out from the brine coolers at a temperature of about 10 or 12 degrees below zero.

Before all nine vessels were refrigerated, it was decided by the Emergency Fleet corporation that they would not all be required, and it would be to its advantage to transfer the refrigeration to larger ships. The refrigeration on contract for the last four vessels was, therefore, cancelled by the corporation.

The machinery for these vessels was furnished by the Frick Co., Waynesboro, Pa., and consists of two steam-driven horizontal engines, with cylinders, 16 x 18 inches, designed for 190 pounds steam pressure. Each engine is fitted with a fly wheel, weighing about 9000 pounds, equipped with a governor and control valve gear. The compressor end of the refrigerating machines are of the double-acting type. with cylinders 12 x 18 inches.

The refrigerating capacity of each machine during 24 hours continuous operation is equivalent to melting 60 tons of ice, or a total of 120 tons refrigeration for each ship. The ammonia condensers were of the double pipe type, consisting of 12 coils of 1¼-inch and 2-inch pipe, each coil 10 pipes high and 20 feet long over all, provided with water-distributing headers and ammonia headers.

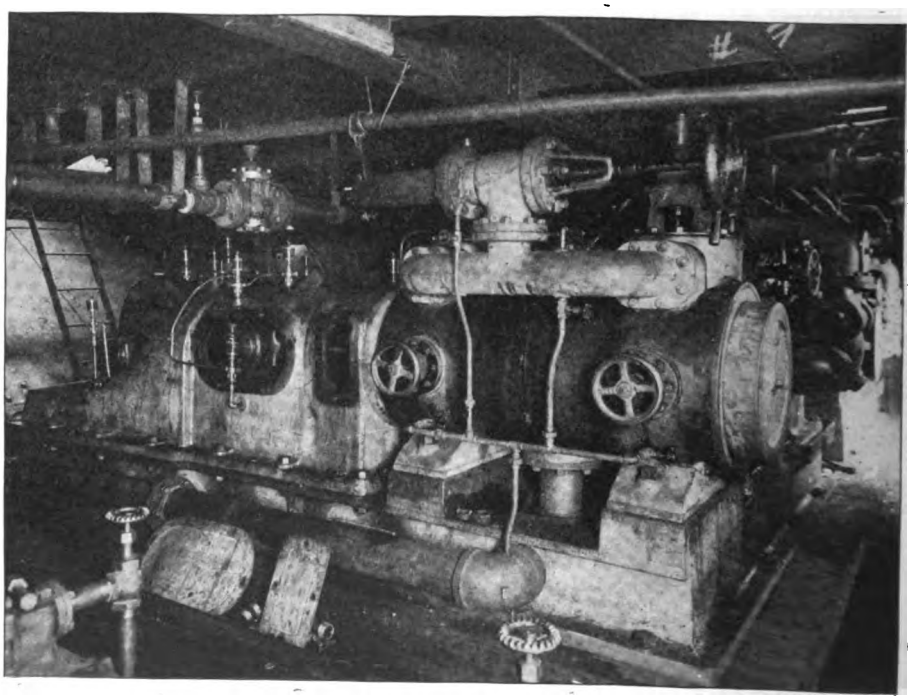
To secure the necessary refrigeration when the vessel was operating, the refrigerating apparatus was installed as two entirely separate duplicate units and so arranged that it could be cross-connected.

Cramp and Kerr Interests Merge

Much interest has been occasioned in the shipping world by the recently announced expansion of the Kerr Steamship Co. and its allied interests, particularly the consolidation of the Kerr Navigation Corp. and the William Cramp & Sons Ship & Engine Building Co., the holding company to be known as the American Ship & Commerce Corp. The progress of the Kerr interests is attributed largely to Alfred C. Clegg, vice president of the Kerr Steamship Co., who, with Henry F. Kerr, organized the company. The organization which Mr. Clegg has placed about Mr. Kerr, the head of the Kerr interests, includes John J. Sharp, assistant to the vice president, who has charge of the entire operating management of all the lines' steamers; C. J. Beck, general manager of the Kerr Steamship Co., who formerly was manager of the freight division of the Hamburg-American line; B. F. Gaede, assistant general manager, formerly manager of the freight division of the Atlas line; A. A. Krug, manager of the department of European trades who received his early training with Lamport & Holt; J. E. Waldorf, manager of the department of Hamburg, South America and the Far East; and William Goepfert, manager of the inward freight and claim departments, and who, at one time, was claim agent and auditor of the Merchant Despatch Transfer Co., a fast freight line of the New York Central railroad.

Mr. Clegg, until early last April, was assistant director of operations of the United States shipping board during the period of the war, and Mr. Goephert, until recently, was associated with W. B. Pollock, marine director of the United States railroad administration.

The following is an official statement of the merger details between the William Cramp Ship & Engine



REFRIGERATING PLANTS REQUIRE MUCH COMPLICATED EQUIPMENT TO INSURE THE PROPER FLOW OF THE COOLING MEDIUM—VIEW IN THE REFRIGERATING ENGINE ROOM

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Building Co. and the American Ship & Commerce Corp.:

"The new company has been incorporated under the laws of Delaware with a capitalization, all of one class, of 1,500,000 shares of no par value. Not less than 300,000 shares are to be immediately syndicated and offered for sale at $40 a share. The company will acquire not less than a majority of the capital stock of the William Cramp & Sons Ship & Engine Building Co., or voting trust certificates therefor, 304,900 shares being available for the immediate acquisition of the majority interest and further exchange of the remaining Cramp shares or other corporate purposes as may be determined, the present basis being five shares of new company stock for each share of Cramp. The remaining shares will be issuable for treasury purposes.

"The company will also acquire a controlling interest in 50,000 tons deadweight capacity ocean steamships of the new Kerr Navigation Corp., representing a recapitalization of the old company of the same name, which company will have outstanding $4,000,000 class A stock, or equivalent no par shares, limited to 7 per cent dividends and carrying no voting power and $10,500,000 class B stock, or equivalent no par shares, carrying voting power, of which latter stock the American Ship & Commerce Corp. will own $7,000,000, or equivalent no par shares, cash being paid by the holding company into the treasury of the Kerr company for that purpose.

"The new Kerr Navigation Corp. will be acquired as of Jan. 1, 1919, and will have $7,500,000 in property and contracts and $7,000,000 cash in its treasury, with no liabilities other than current.

"The present operating managements of the Cramp and Kerr companies will remain undisturbed.

"American Ship & Commerce Corp. will also acquire, directly or through subsidiary or associated companies, an import and export business.

"After acquisition of the above interests the new company will have a substantial cash balance in its treasury for the development of international trade or for the extension of the new company's business."

Work of Ship Bureau Praised

ONE of the last official acts of Edward N. Hurley, before retiring as chairman of the United States shipping board, was to write a letter commending the work done by the American bureau of shipping in which he referred to the development of this bureau as extraordinary. "One of the greatest needs of the future," said Mr. Hurley, "for the proper maintenance and development of an American merchant marine is a strong organization operating on the lines of your bureau." The text of the letter follows:

"Your letter of July 25 outlining the growth and development of the American bureau of shipping during the trying period of the last two years, and also giving expression to your opinion and ideas of the needs of the future is to my mind a splendid statement.

"The data you give is interesting and illuminating and it would be of great benefit to have the facts in relation to your organization, its work, growth and development, and its prospects more generally disseminated, not alone among shipping men, where the problem is understood, but throughout the country. It is doubtful whether the public generally appreciate how very important an organization such as yours is to the maintenance and operation of shipping, but it is needless for me to say to you that it is one of the most necessary factors in the successful operation of shipping.

"The development made by your bureau is extraordinary, both in personnel and in the character of the work done, and it is beyond question that one of the greatest needs of the future for the proper maintenance and development of an American merchant marine is a strong organization operating on the lines of your bureau and developed to meet the needs as outlined in your letter.

"In conclusion I feel that I am warranted in saying that you will have the sympathetic support of the shipping board toward the end of developing your organization as you have outlined the plans in your letter."

Mr. Taylor in his reply to Mr. Hurley stated that 567 wood, 447 steel, one composite and 12 concrete ships had been classed by the bureau since its organization in 1916, the total tonnage registered being 2,380,318 gross.

"When the United States entered into the great war," wrote Mr. Taylor, "and the shipping board started the building of ships, shipyards and facilities connected therewith, this bureau had materially increased its staff and resources.

"On May 10, 1918, it was ordered by the shipping board that all contracts, after that date, for steel ships there should be 75 per cent passed by this bureau and 25 per cent by the British Lloyds registry.

"At the time of the signing of the armistice we had received about 70 per cent, but the cancellations following the armistice has reduced our proportion of steel ships to 62 per cent, a situation that could not in our opinion have been avoided. We feel however that the time has come when every American support possible should be given to our American classification society particularly the full and undivided support of the United States government."

Expressing the opinion that "an American merchant marine can be truly American only when every element that enters into it is American," Mr. Taylor points out that the American bureau of shipping has ample facilities and equipment for the survey and classification of all ships built in the United States. "We believe," he said, "that the time is now at hand when the shipping board should not permit vessels built under its direction to be classed by any foreign society. We appreciate your efforts as chairman of the shipping board in strengthening and upbuilding the American bureau of shipping and we have every confidence that the shipping board will now adopt the policy of building all of its future ships under the classification of this society to the end that this American classification society may be able entirely to fulfill its important function in the development of a truly American merchant marine."

The United States shipping board has announced new prices for the sale of ships. Wooden ships are now quoted at $90 per deadweight ton. Steel ships of the lake type, 3500 to 4200 tons, are quoted at $200 per deadweight ton; Submarine Boat corporation type vessels, 5500 to 5600 deadweight tons are $210 per ton; Hog Island type ships are $215; Skinner & Eddy type ships, 8800 deadweight tons, are $225, and Skinner & Eddy vessels, 9600 deadweight tons, are $220.

The terms for the wooden ships are cash. For the steel ships the terms are either cash or 25 per cent on delivery, 12½ per cent six months after delivery, 12½ per cent twelve months after delivery followed by semiannual payments of 6¼ per cent for four years.

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Ore Carriers for Ocean Service

New Bulk Freighter Operates Between This Country, Cuba and Chile—Vessels Are Specially Designed to Facilitate Quick Loading — Turbine Drive Used

BY V. G. IDEN

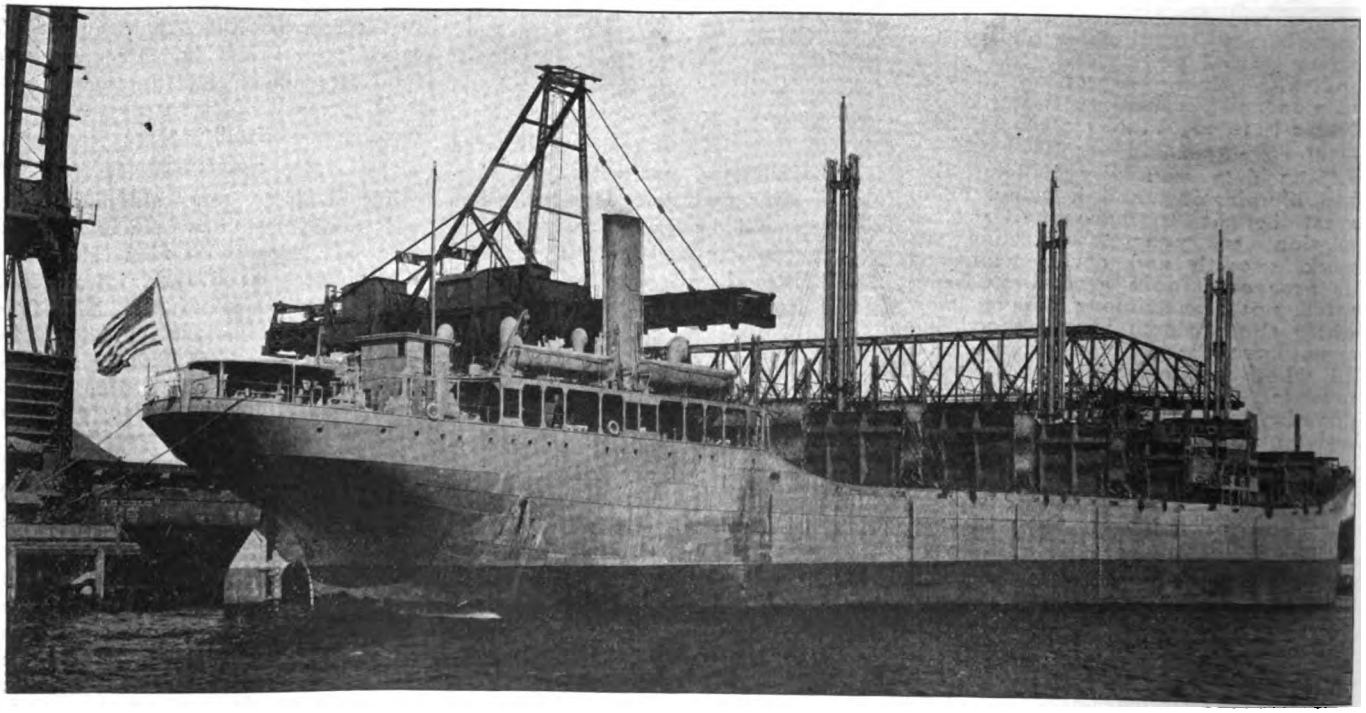
TO transport iron ore from its deposits owned in Cuba and Chile, the Bethlehem Steel Corp. is building a fleet of cargo carriers which show some decided advances in the art of marine architecture. This corporation has already built five vessels of the type that will be used in the Cuban trade, and contemplates constructing eight more for that service. Due to the limitations of the Cuban ports, it was not possible to construct vessels of the size that can be used in bringing ore from Chile. The first boats are known as the Cubore type, since the first to be built was named CUBORE. They are 11,669 deadweight tons each, equipped with geared turbines capable of 2400 shaft horsepower. They have three boilers and bunkers fitted for coal or oil fuel. A smaller steamer, the MANGORE, of 6140 tons deadweight capacity of the same type is also in service to the ports that will not accommodate the larger vessels.

The three sister vessels now in operation are the FELTORE, SANTORE and FIRMORE. The CUBORE was placed in commission in September, 1917. She was diverted to the army service by the government in June, 1918, and was torpedoed on Aug. 15, 1919, while in that service. The other four vessels have since been returned to the owning and operating company, the Ore Steamship Corp., and are now in service transporting ore from Cuba to Sparrows Point, Md.

Bringing ore from a foreign country to a plant in the United States is a different proposition from transporting ore on the Great Lakes where the movement is entirely domestic. The Ore Steamship Corp. vessels must have foreign clearance papers and comply with all the regulations of the customs authorities at home and abroad which considerably retards the operations. In Cuba they are not able to dock at night and they are subjected to different weather conditions than prevail on the Great Lakes. Despite the handicaps incidental to the trade of these vessels, carrying approximately 11,300 tons of ore per trip, one will make the round trip between Cuba and Baltimore in 12 days, delivering 25,000 tons of ore per month.

Naturally these vessels, being designed for ocean service, are not as long as the ore carriers of the lakes. While the Cubore type is capable of carrying a cargo as great as the largest of the lake carriers, it is intended further to reduce the cost of operation by increasing the size of the vessels to be used in the Chilean trade. It was impossible to build the Cuban ore boats any larger because of the limit of the harbor facilities, but this will not operate against the ships to be sent to Chile. The company intends to construct vessels of approximately 20,000 deadweight tons for this trade. The plans for the latter are now being drafted and the program of the corporation calls for a fleet of 15 to 20 vessels of that size when the building is completed.

Although built primarily for the Cuban and Chilean ore trades, these vessels have successfully carried, in the transatlantic service coal, grain and general cargoes. One of the prime features of their design was the direct inspiration for probably the greatest transportation feat accomplished by the army during the recent war. The vessels were built with hatches of extreme size. The hatch covers are made of corrugated steel plates in two sections which open up like a door and lay back upon a framed superstructure on the deck. There are no obstructions in the



ORE VESSEL MOORED AT SPARROWS POINT WITH HATCHES OPENED READY FOR UNLOADING—MACHINERY IS INSTALLED AFT TO GIVE AN UNOBSTRUCTED HOLD

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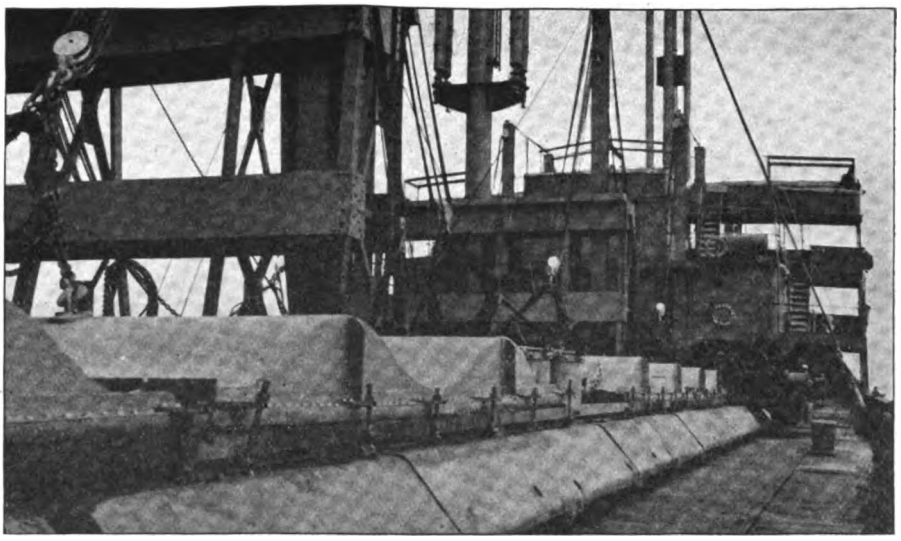
hatches and no stanchions in the holds. This arrangement gave the inspiration to the transportation service to ship completely set-up locomotives and tenders to France. They were loaded into the holds without necessitating the least alteration to the vessel. The success attained in this instance resulted in considerable saving of time for the army in placing such equipment in service in France.

The Cubore type ship is 469 feet long over all, with a molded beam of 57 feet and molded depth to upper deck of 37 feet. Hatch No. 1 is 26 x 33 feet, Nos. 2, 3 and 6 are 33 x 37 feet, Nos. 4 and 5 are 37 x 39 feet. This leaves a free deck but 10 feet wide on either side of the principal hatches and on this deck space are placed cargo winches which serve to open and close the hatch covers and to handle cargo whenever necessary. The hatches have steel coaming and hinged corrugated steel covers in two parts.

Quick Loading and Unloading

All the cargo hatches can be opened and shut within an hour. The Cubore type loads 11,500 tons of ore within 5½ hours with the improved loading machinery installed in Cuba. The unloading facilities at Sparrows Point are to be improved. At present 5-ton buckets are being used but these are to be replaced with 15-ton buckets. It now requires about 18 hours to unload whereas it is expected to be able to unload within 5 hours with the new equipment. At Daiquiri, Cuba, the vessel lays offshore about 215 feet and is moored to 10 buoys under a cantilever. Ore is delivered by a belt conveyor. At Felton in Nipe bay, Cuba, the boat goes up to a dock and ore is delivered over two ore bridges. When laying up at these ports, the vessel will draw about 27¾ feet mean of water, and will draw nearly 29 feet aft when leaving loaded.



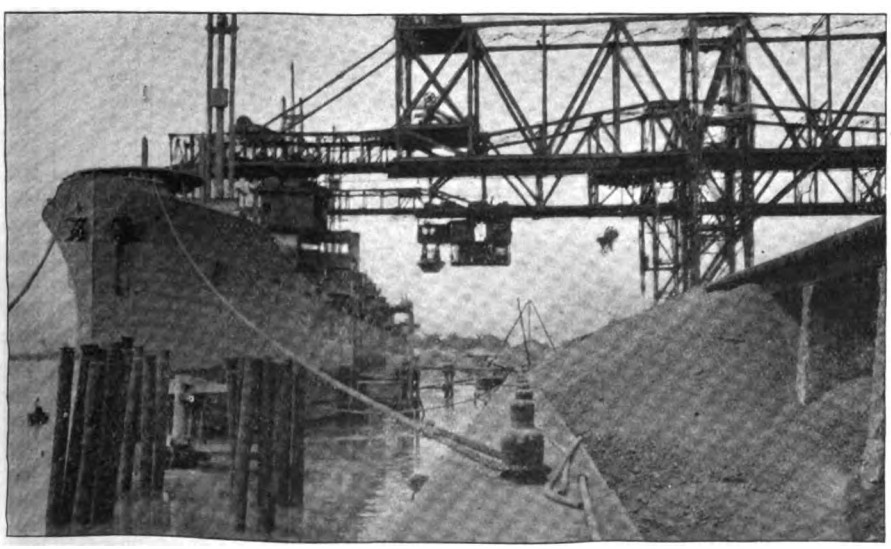
DECK VIEW SHOWING THE HATCH COVERS AND TACKLE FOR RAISING

The vessels have averaged 10 to 10½ knots when loaded and 11 to 12 knots when in ballast. Other bulk carriers have been designed for ocean service but this particular type of boat was built to meet a particular condition and to cope with a competition that is extremely aggressive, the cheapness of ore transportation on the Great Lakes.

Ship Well Designed

They are single-screw built of steel on the Isherwood system, and meet the specifications of American bureau of shipping and Lloyds register classification insofar as concerns design and construction of the hull, deck equipment, engines, boilers and shafting and the installation of bilge and ballast system. They are of the single-deck type, with machinery in the stern, with poop forecastle and short navigating bridge. They have a double bottom fore and aft and side ballast tanks from cross bunker bulkhead to forepeak bulkhead. This arrangement is of special significance as frequently these vessels are sent back from Sparrows Point to Cuba in ballast.

There are three cargo holds with six hatches, two to each hold. The vessel has four watertight bulkheads, one nonwatertight bulkhead and two oiltight bulkheads. She has three masts, 12 booms, 6 winches, one windlass, one capstan and one steering engine. Accommodations are provided for 46 officers and crew. The captain's and deck officers' quarters, spare room and room for the pilot are in a house on the bridge. The engineer's quarters are in a house on the poop deck. The captain's saloon, engineers' and petty officers' mess, steward's, quartermaster and carpenter and boatswain, seamen's and firemen's quarters and hospital are under the poop deck. The vessel has a straight stem, elliptical stern and three masts with booms rigged for handling cargo.



TYPE OF ORE BRIDGE USED FOR LOADING AT FELTON, NIPE BAY, CUBA

Exceeded Specifications

The single screw is run by a geared turbine. The vessel has three Scotch boilers with all necessary auxiliaries. The building specifications required that the vessel be capable of carrying about 11,300 tons, of 2250 pounds, including cargo, 6000 gallons of fresh water, fuel, stores, feed water and extra spares over what is required by the classification societies, but excluding water in boilers and condensers on a maximum mean draft of 27 feet in salt water. The deadweight requirements were exceeded however, by the Sparrows Point plant of the

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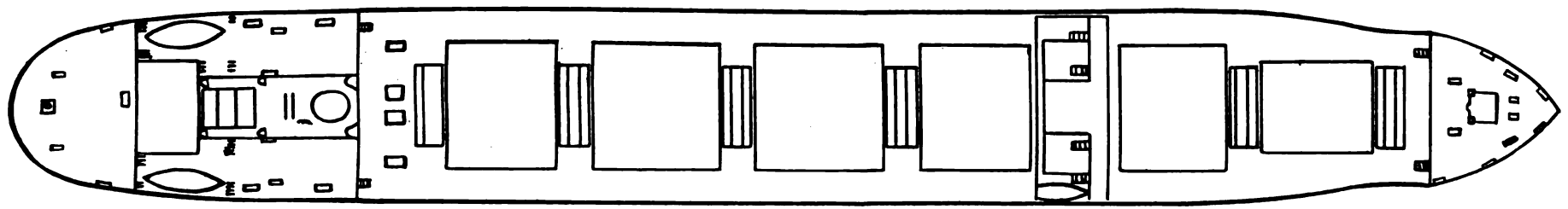
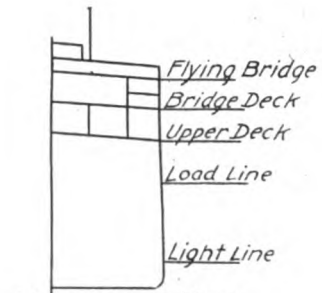
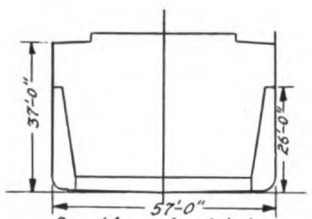




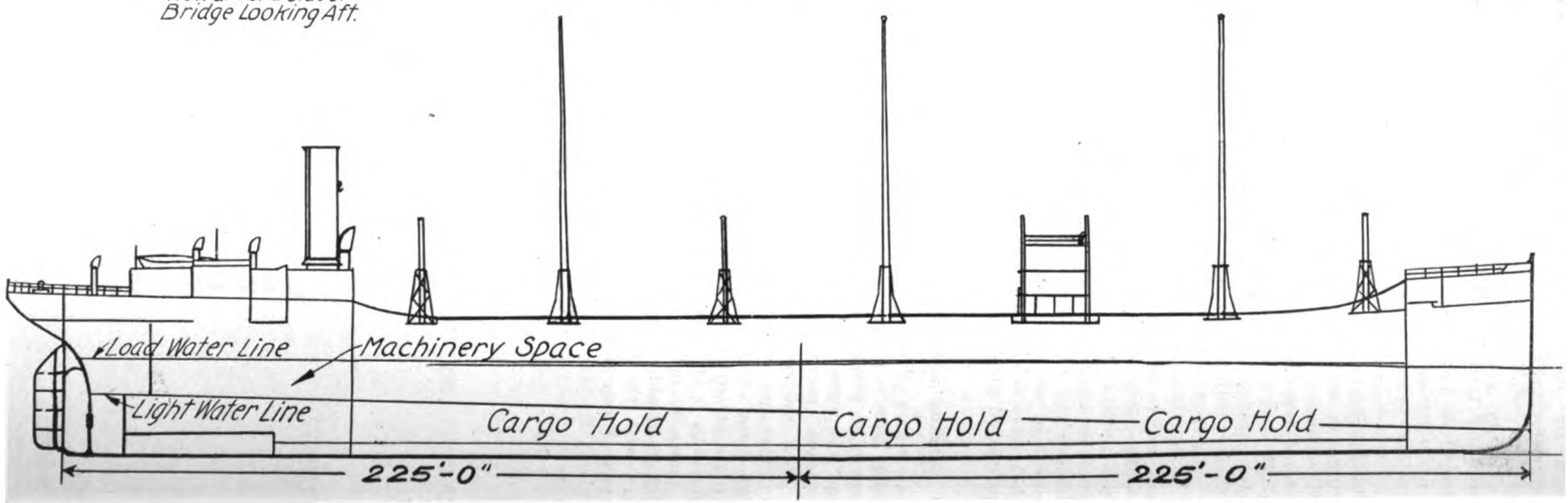
View at For'd Side of Bridge Looking Aft.



Section Amidship

PRINCIPAL DIMENSIONS

Length Overall	468'-0¼"
Length Between Pds.	450'-0"
Beam Molded	57'-0"
Depth to Upper Deck	37'-0"



SHEER AND DECK PLANS, END ELEVATION AND MIDSHIP SECTION OF VESSEL DESIGNED FOR CARRYING ORE ON DEEP WATER—THESE VESSELS ARE USED BY THE BETHLEHEM STEEL CORP. FOR TRANSPORTING ORE FROM ITS HOLDINGS IN CUBA AND CHILE

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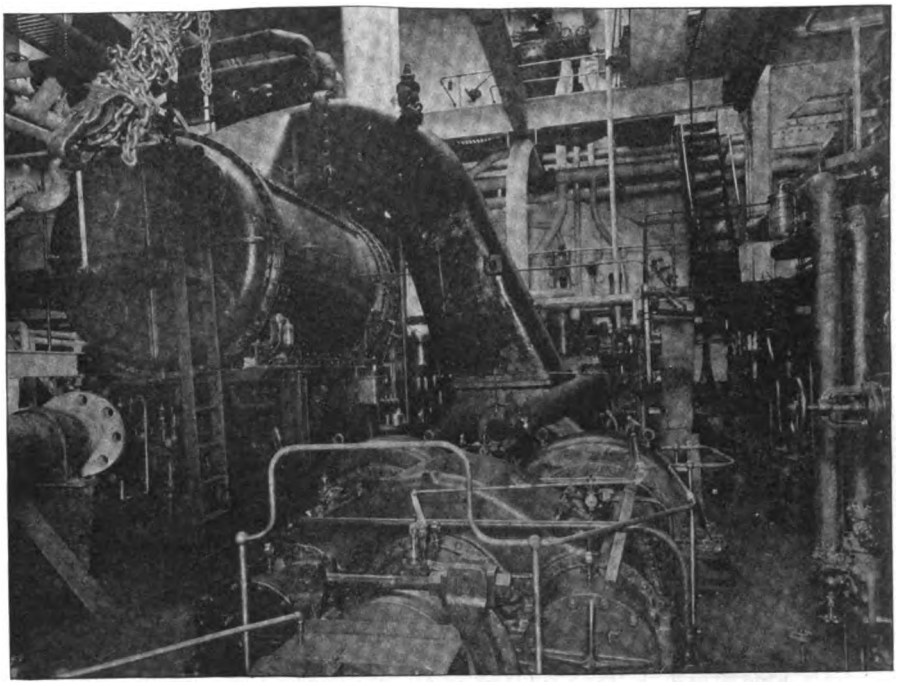
Bethlehem Shipbuilding Corp. where the vessels were built.

The rudder if of the single plate type, having wrought steel stock, arms shrunk on and connected to wrought steel extension stock by vertical coupling. The rudder bearings are of cast iron with brass bushing. The propeller is of the built-up type with four blades of manganese bronze. The hub is semisteel. A cast iron cap is fitted to the after side of the hub.

The ship is steam heated and electrically lighted. A cross bunker for fuel oil or coal is located forward of the boiler room. It has a steel oiltight center line bulkhead, fitted fore and aft, also necessary webs and swash plates. The bunker extends from the double bottom to the upper deck. Bolted plates on channel frame are made oiltight to fit over openings to the fireroom when used for oil fuel. Side bunkers for coal are located on the port and starboard sides of the engine and oiler spaces between upper and lower decks, with hatches on poop deck and trunks between poop and upper deck.

The vessel is fitted with a turbine engine and a high and low speed reduction gear. The engine is designed to have a maximum efficiency when delivering 2400 shaft horsepower at 90 revolutions per minute, but to be capable of delivering a maximum shaft horsepower of 3000. The boilers have a working pressure of 200 pounds per square inch. The turbines are so arranged that the ahead turbine and the reversing turbine are carried on one shaft and in the same shell. When the turbine is running reversed with full steam flow and at two-thirds of full forward speed, it will develop not less than two-thirds of the forward full speed torque. The turbine is fitted with two balanced quick-opening valves, one for the ahead and one for the reverse nozzles. The opening levers for these valves are located adjacent to each other, so that one operator can handle both. These valves are so arranged that they can be tripped and closed, either automatically or by hand. The total reduction of speed between that of the turbine and of the propeller shaft is accomplished in two steps, each reduction being obtained in a separate gear casing. The high speed reduction gear reduces the speed to about 458 revolutions per minute, and the low speed reduction gear reduces the speed from approximately 458 to 90 revolutions per minute.

The turbine and reduction bearings are provided with forced lubrication. The oil is supplied by two oil pumps, which discharge through a duplex oil strainer and an oil cooler to the bearings. The return oil is lead to an oil drain tank located beneath the engine room floor plates. The pumps are also arranged to draw oil from the drain tank and discharge to an oil settling tank located in the engine hatch. There are two oil storage tanks located in the engine room, arranged to be filled from the deck and to have outlet connections for supplying the lubricating system.



LOOKING FORWARD IN THE ENGINE ROOM ABOARD ONE OF THE ORE VESSELS

Shipping Board Sells 100 Steel Ships

The United States shipping board recently announced that negotiations had been concluded for the sale of 100 steel, coal-burning steamships of the lake type, the tonnage ranging from 3300 to 3600 deadweight. The sale was made to J. Herbert Anderson, representing the Anderson Overseas Corp. It is understood that the purchase is for French and Italian account. About $80,000,000 is involved in the transaction. This is probably the largest fleet ever sold at any one time. The shipping board is to deliver the first vessel not later than Aug. 10, 1919, and thereafter to make delivery of not less than six vessels in each week following. Deliveries to be at an Atlantic port not north of Boston or south of Newport News, Va.

After the date of delivery, and so long as the shipping board retains title, the buyer agrees as to each vessel: To insure each vessel at a value not less than the balance remaining unpaid to the shipping board, the underwriters insuring the vessels to be satisfactory to the shipping board and policies to cover all fire and marine risks. The policies shall provide that in case of partial loss the same shall be payable to the buyer; the buyer being obliged to repair. In case of actual or constructive total loss, moneys due under insurance policies shall be payable to the shipping board to the extent of any balance that may remain unpaid on account of the purchase price, less 5 per cent interest, to be computed on anticipated payments, the balance to be paid to the buyer.

To keep each vessel free from liens arising from operating expenses and repairs, in so far as that is practically possible, the buyer agrees that no bills shall be allowed to run over 30 days after they are rendered and payable, the shipping board having the right to inspect the books of the buyer or of the actual operator to check performance hereunder. To keep each vessel in repair and maintain her class the shipping board reserves the right of inspection.

The Anderson Overseas Corp. was organized by J. Herbert Anderson for the sole purpose of taking title to the 100 ships purchased from the shipping board. Mr. Anderson, the president of the corporation, is the owner of the Anderson Co., New York, the Anderson Co. of Canada, Montreal, and the Anderson Overseas Co., Ltd., of London.

The Anderson company has probably been one of the largest handlers of ship purchases during the war and since the armistice was signed. Throughout the war it represented the French government in the purchase of steel tonnage. Since the armistice was signed it has purchased over 100 trawlers and drifters from the British government. It is at the present time completing the construction of 50 ships in Canadian shipyards.

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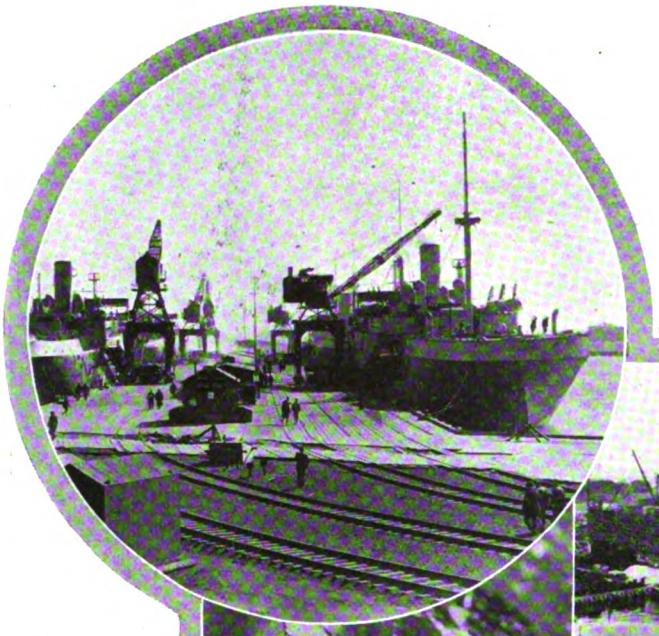
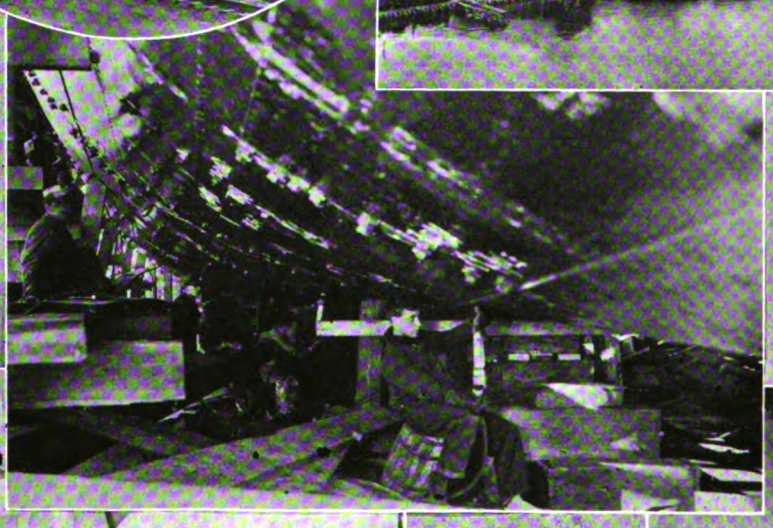
Latest Marine News in Pictures

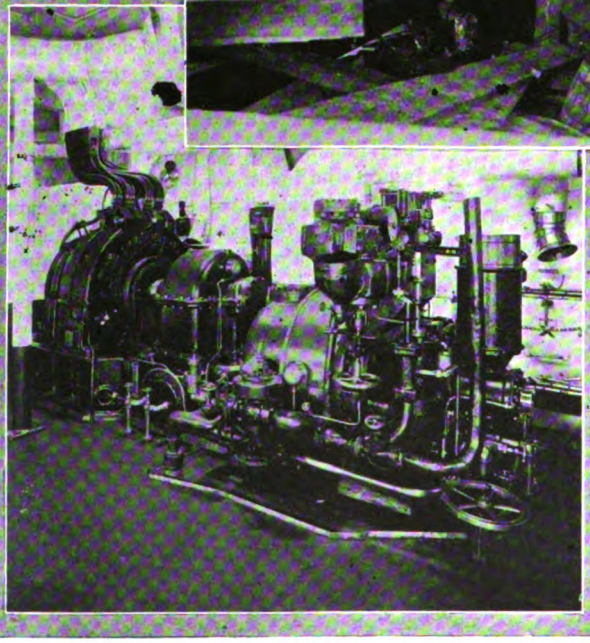


Hog Island with its modern appliances for handling cargo, including 28 locomotive gantry cranes, each with a capacity of 30 tons, is considered by some experts as the greatest potential terminal in the United States

Working on bottom plates at Suisan bay, Cal., yards of the Pacific Coast Shipbuilding Co.

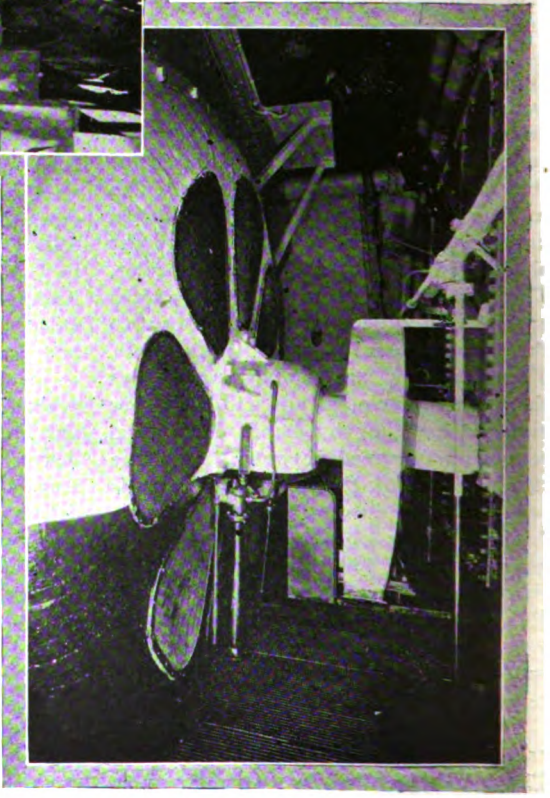


Newark bay shipyard of Submarine Boat Corp., built in less than a year for fulfillment of corporation's wartime contract with government



One of the six big turbo-generators built by the General Electric Co. for the United States steamship New Mexico. Six units combined deliver 2400 horsepower

One of the electric motors built by the General Electric Co., driving starboard inboard propeller of the United States steamship New Mexico. It is 12 feet high and generates 7000 horsepower



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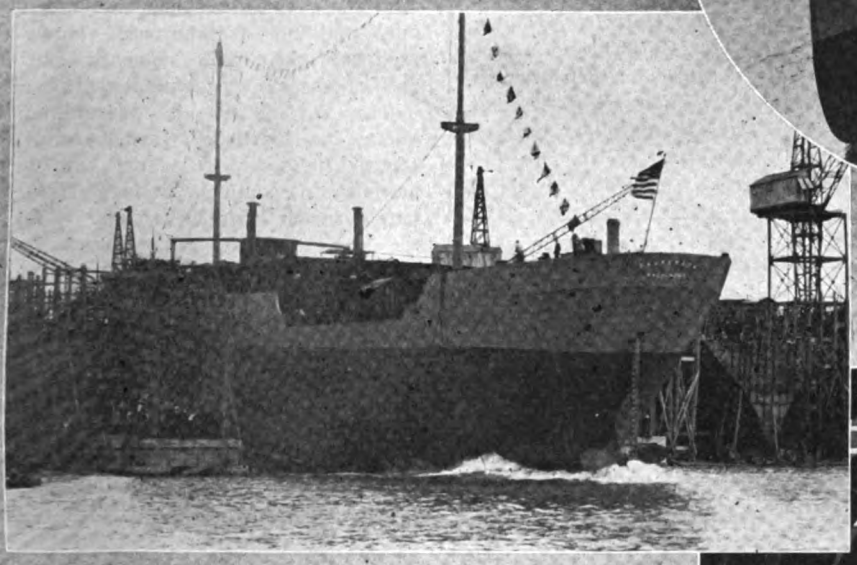
Photographs From Far and Near

To avoid a fatal glancing blow, the skipper of the steamer Grampion quickly altered his course and struck an iceberg head on. Two lives were lost, but the ship managed to make an Atlantic port safely

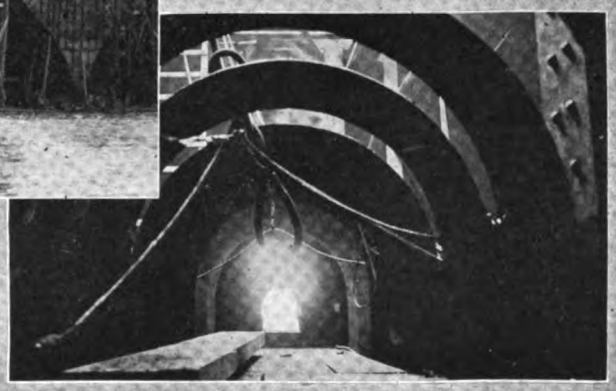
Mrs. George Wiley, daughter-in-law of C. W. Wiley, president, Todd Drydock & Construction Co., Seattle, sponsored the recently launched steamer Zarembo

The United States destroyer Humphrevs, launched by New York Shipbuilding Co.



The 8800-ton cargo carrier Dauperata, launched July 19 at the South plant of the Baltimore Dry Docks & Shipbuilding Co.

Looking through shaft casing of 9400 deadweight ton steamer, built by Pacific Coast Shipbuilding Co., for government



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Problems of the Vessel Operator

New Army Base at Boston—Finding Bearings at Sea—Completes Long Voyage Shorthanded — Pointers on Sternboard

THE new army base at Boston is the second largest construction job in any port of the United States. The work includes three principal units, a storehouse, a wharf shed and a pier shed. More than a mile of berthing space is provided for ships. Boston harbor now has high-grade facilities for loading and unloading 41 large ocean-going ships at one time and this easily puts Boston into a high place among United States ports in respect to the number and character of berths available for types of ships figuring most conspicuously in the world's commerce.

The storehouse and wharf shed of the new army base at the present time are operated by the army and the pier shed is operated by the navy. In point of construction and equipment, the entire plant is in advance of anything hitherto constructed in Boston, even including the splendid Commonwealth pier No. 5. The pier shed of the army base offers 950 lineal feet of berthing space on either side and 300 feet along its face with a present depth of 30 feet at mean low water which is to be increased to 35 feet. The pier shed consists of two buildings each about 924 feet long and 100 feet wide, three stories high. This shed has a total floor area of 580,000 square feet.

Wharves and sheds are of heavy construction and have capacity for floor live loads up to as high as 500 pounds per square foot on the first floor of the wharf shed and 400 pounds per square foot on the second floor, while the capacity of the pier shed is only slightly less. Both of these sheds are equipped with elevators and cargo hoists on the water side for handling cargo from either the first or second floor. In addition there are semiportal bridge cranes. The storehouse which is adjacent to the wharf and pier sheds is one of the largest buildings in the world, built of reinforced concrete, eight stories high, 125 feet wide and 1638 feet long. The total floor area is over 1,650,000 square feet. The building is served by 24 freight elevators with a capacity of 10,000 pounds with an operating speed of 150 feet per minute.

Other features of the army base are a power house and administration building suitable for an enterprise of this sort. The plan of operation for this equipment for army use gives some indication of how it would be employed if all or a portion of it should be turned over to civilian use. It is planned that outward freight shall be delivered to the terminal by rail, automobile trucks, teams, vessels and lighters. Rail freight enters the terminal through the yard west of the storehouse where the cars are sorted for delivery to and spotting at the storehouse, wharf shed and the pier shed, as the case may be. Bulky freight not likely to be damaged by the weather may be stored in the open storage to the west of the wharf shed and storehouse. The unloading tracks for the storehouse run along its north side and inside trailer trucks hauled by electric storage battery tractors are used for unloading cars. The sorting of cargo in the storehouse and the delivery from the storehouse to the ships is also effected by means of tractors.

Few Large Liners

AT the present time, only 23 ocean liners of 20,000 tons are afloat, while only 22 of over 10,000 tons are now in process of construction. During 1918, but five steamers of over 10,000 tons were launched and of these none exceeded 15,000 tons. The shipping returns of Lloyds register for the quarter ended March 31, show, however, that a substantial beginning has been made to replace the large ships. The most striking feature of the returns is the activity in ship construction outside of Great Britain for while the United Kingdom yards have but 2,225,000 tons in process of construction the vessels building in all other countries total 5,541,000. Of these 75 per cent or 4,185,000 tons are building in the United States.

To Find Bearings

Vessels at sea which have lost their bearings through fog banks or other causes are no longer in such distress as was the case in years previous to the last of the war. They still can become lost, insofar as not knowing where they may be, but information asked by radio from shore naval stations will set them on the right course. The United States naval communication service has perfected a system of triangulation that has eliminated the danger of ships being lost. It is not the discovery of any one man. Indeed, it truly cannot be classified as a discovery. It is simply a perfection of a basic rule of position finding that has formed the fundamental of range determination in the army and a straightforward geometric theorem concerning intersecting lines.

It is to be assumed that a ship is a hundred miles off the middle Atlantic coast. She has lost her bearings. Her navigators are unable to tell her latitude and longitude. The ship's radio flashes the American coast a demand to be told the data the navigating officer needs: "Where am I?"

This request coming within the sector for which the New York district central controlling radio station is responsible, the appeal is received by five radio compass stations located at Montauk point, L. I.; Fire island, Rockaway beach, Sandy hook and Mantoloking, N. J.

Each of these stations is connected with the New York station by telegraph and telephone. These radio compass stations cannot communicate with the "lost" ship, as they are receivers only and not transmitters. However, each of the radio compass stations notifies the central station that a ship within the district is demanding to know its location. Immediately the central station instructs the bewildered mariner to continue flashing his call letters for at least 30 seconds. And at the same time the radio compass stations begin obtaining bearings on the ship.

The operators in the five stations turn their compass wheels until each has an accurate bearing. These five readings are transmitted to the central station where, on a huge chart, the five readings are combined. Each reading will indicate a certain number of miles between the ship and the station that took the bearing. It is a relatively simple matter, then, to project these lines upon the chart until the five lines intersect. And that point of intersection is the location of the calling ship. Acknowledgement from the ship completes the operation.

Every American port is now being safeguarded by just such systems of radio compasses and central stations. Within a few months, at any point

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along the coast, mariners will be able to approach channels, reefs and shoal waters with an absolute assurance that they will not proceed too near, nor yet exercise such great caution as to throw them out of their course. And thus also is the danger attending fog banks eliminated.

Completes Long Voyage Shorthanded

How the Norwegian bark SUPERIOR made the trip from the South Sea islands to New York with but half of a crew on board, delivering her cargo to the Norwegian-American Trading Co. without mishap, is one of the stories of the sea which holds much that is out of the ordinary.

Captain K. Hansen started from Manila to New York with 1000 tons of sugar and 1000 tons of hemp on board. The bark carried 17 men in her crew, including officers. From the China sea, Captain Hansen took a southwest course through the Straits of China headed for the Sunda Strait to the west of the island of Java. Meeting unfavorable winds he was compelled to change his course and make for Lombok Strait to the east of Java. He had not entered the straits before he met a calm and was compelled to lay off for six days. Finally he made some headway on full and by courses and had reached a point near the south entrance of the straits. On the bark's starboard was the coast of Java and on its port was the high, abrupt, rocky cliffs of the island of Bali.

The wind died out again but there was a heavy incoming current which was driving the ship at the speed of about 5 knots. An anchor was let go but it failed to find bottom. All the time the ship was being carried in the direction of the cliffs of Bali. The two boats were put overboard and the crew escaped before the bark would pile up on the rocks; as they believed she would certainly do. Captain Hansen was in one of the boats and the chief mate was in the other. The mate made to a point further along the shore, but the captain's boat was leaking. After hanging off for about five hours in this condition, it was discovered that the anchor had at last found bottom.

The captain and the eight men with him boarded the bark again. She was lying close to the reefs, but when her hold was sounded she was found to be tight. By this time a light offshore breeze sprung up, the yards were braced, the cable shipped and the vessel finally crawled off shore. For two days the craft ratched back and forth on short tacks outside the straits while a search was made for the missing boatload of men. Rockets and flareups were used in an attempt to locate the mate and the missing members of the crew.

It was finally learned that the mate had made Sourabaya about six or seven days later and declared that the bark had been abandoned. According to the accounts told the mate had returned to the spot he had left the ship and finding no trace of her naturally concluded that she was lost. Two months later came a report from St. Helena to the effect the SUPERIOR has passed that point. Captain Hansen brought his ship around the Cape of Good Hope, and sailed her all the way to New York, short handed. Although several months late the ship and her cargo was delivered without mishap.

Pointers on Sternboard

Handling a destroyer involves navigating skill of no mean importance, and Commander C. C. Slayton, U. S. N., has recently contributed some valuable notes on his experiences to the U. S. Naval Institute, Annapolis, Md. "The question of what a ship will do with one or both screws astern," says Commander Slayton, "is not well understood by many captains, and a better knowledge will not only avoid damage by knowing when not to back, but also knowing how to back may give one the opportunity to make some very pretty landings.

"Always leave the dock or slip by going ahead if possible. The ship is under much better control when going ahead, and the engines are better able to give you what you want. If you back away, the bow may pay off toward the dock or the vessel alongside, for the ship is more at the mercy of the wind, etc., when backing than when going ahead. Furthermore, the initial 'kick' of the engines going astern may not be equal, causing the ship to cant one way or the other.

"The 'kick' comprises two elements: (1) The sidewise pressure of the blades deepest immersed (very noticeable when the screw churns on first starting); and (2) the pressure of the screw current on the hull. The first has the strongest effect and it diminishes when the ship gathers sternboard.

"In going ahead you should not give much rudder to swing the bow out, for the stern will come in fast, and your propeller guard may leave a long mark on your neighbor. In some cases it will even be necessary to shift the rudder, to swing the stern out, in order to avoid fouling the anchor chain or buoy of your neighbor. If there is a slight tendency of wind or current setting you down on your neigbor, often a good bit of speed is necessary.

"If conditions are better for backing, it is best to get away quickly in most cases, in order to obtain some steering effect of the rudder and to minimize the effect of the wind. If you are between two other boats, back both engines at a good rate, say two-thirds, or even full speed, to get the ship started. The wash of the screws will carry the sterns of both neighbors away and you will come away clean. Needless to say, slow down to a safe speed as soon as you are clear.

"If the harbor is rather crowded, having backed away, but clear astern, it might be well to continue backing until you have plenty of room to turn. Only, be careful about crossing the bows of vessels at anchor. When going astern be careful how you use your rudder. A quick shifting of the rudder while you have sternboard may result in the rudder taking charge, on account of the pressure of the water on it, with a probability of a jammed steering gear, and perhaps a damaged steering engine.

"Do not forget that when going ahead with full rudder you do not make ground to the side immediately. The ship, though turning, will range along its original direction of motion, and may even be set initially to the other side, due to the kick off of the stern, for the stern starts first, not the bow. We all know this truth, but occasionally forget it in the business of maneuvering."

Opens New Pier

Commonwealth pier No. 1, Boston, opened for business recently, is constructed on oak piling with a timber platform, 150 feet wide x 420 feet long. The shed is 140 feet wide x 400 feet long and the rail service is a single track connection with the Boston & Albany railroad, extending through the center of the shed and accommodating seven cars within the shed. The shed is electrically lighted and equipped with power lines for operation of winches. The depth of water available on the east side is 38 feet at mean low water while the depth on the west side is 30 feet. The cost of the shed, exclusive of the property and dredging was $350,000. Two generous berths for 400-foot vessels are provided and the construction covers only one-half of the area that will ultimately be devoted to a pier on its site, the length of the entire pier when fully constructed being laid out for 840 feet.

The first vessel to dock at the Cunard line's new Philadelphia pier was the steamer KEEMUN, from England.

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Marine News in a Personal Way

Intimate Gossip About What Leaders in the Maritime World Are Doing

CHARLES G. DU BOIS has been elected president of the Western Electric Co., New York, to succeed H. B. THAYER, who recently resigned after 38 years of continuous service. Mr. Du Bois was born in 1870. After graduating from Dartmouth college in 1891 he entered the employment of the Western Electric Co. as a clerk in the accounting department. In 1896 he was appointed chief clerk at the company's New York office. In 1898 he was elected secretary of the company with offices in Chicago. Shortly after he assumed the duties of secretary, Mr. Du Bois was also appointed supervisor of branch houses. In 1897 he was transferred from the Western Electric Co. to the American Telephone Co. as comptroller. Shortly after the country became involved in the war, Mr. Du Bois went to Washington to serve as comptroller for the American Red Cross. On Oct. 1, 1918, he rejoined the Western Electric Co. as vice president, which office he held until he was elected president. Mr. Thayer has assumed the duties of president of the American Telephone & Telegraph Co.

* * *

LESLIE MORGAN has joined the organization of the Wells Steamship Corp. Formerly he was connected with the freight department of Lamport & Holt.

* * *

G. T. NEWBURY has assumed his duties with the coast service under the railroad administration pending developments in foreign trade expansion. Recently he acted as secretary of the American Steamship association. For several years, Mr. Newbury was connected with the Old Dominion Steamship Co. in charge of traffic. Later he operated the company's New York terminals.

* * *

HENRY L. BRITTAIN has been elected president of the Mobile Shipbuilding Co., Mobile, Ala., at a recent meeting of the directors. Other officers elected are: FRANK MCLAUGHLIN, vice president and general manager; GEORGE D. BRITTAIN, treasurer; FRANK W. BOYKIN, secretary and assistant treasurer; HENRY D. TUDOR, chairman of the board. The directors of the company are: HENRY D. TUDOR, A. L. STAPLES, HENRY HALL, FRANK W. BOYKIN.

* * *

WARREN V. HOOD, since receiving his discharge as captain in the ordnance department, has become connected with the engineering department of the New York Shipbuilding Corp., Camden, N. J.

* * *

L. C. SPRAGUE has been appointed manager of western railroad sales with headquarters in the Fisher building, Chicago, for the Chicago Pneumatic Tool Co. H. G. BARBEE has been appointed manager of eastern railroad sales with offices at 52 Vanderbilt avenue, New York. NELSON B. GATCH, formerly district manager of sales at Chicago, has been appointed district manager of sales at New York, succeeding Mr. Sprague.

CHARLES G. DU BOIS

* * *

B. B. DORRY recently was appointed superintendent of the fourth lighthouse district. He succeeds THOMAS J. ROUTH, who has resigned.

* * *

E. P. BERTOFF has taken an executive position with the American Bureau of Shipping, New York. For 30 years he was commandant of the coast guard service which now is part of the navy.

* * *

E. WILTON LYON has been appointed manager of the ships sales division of the United States shipping board which is located in the custom house, New York. Formerly Mr. Lyon was manager of the credit department of the Bankers Trust Co., New York.

* * *

WILLIAM R. VIRTUE now has charge of the New York offices of Crowell & Thurlow, Boston. Mr. Virtue formerly was connected with the Maritime Transportation Co., New York.

* * *

CAPTAIN DOW, veteran vessel manager, who formerly commanded the Cunard liner LUSITANIA, has retired from the sea.

* * *

CARL L. BREHM has resumed his duties as manager of the Delaware Discharging Co., Camden, N. J.

* * *

EVERETT M. PRICE recently was appointed warden of the port of New York.

* * *

J. J. LE BLEU, expert accountant with the Holland-American line, has resumed his duties at the company's home office, having returned from a several months' business trip in Holland.

* * *

EARL G. ROEBLING, president of the John A. Roebling & Sons Co., has been appointed a director of the American Ship & Commerce Corp.

* * *

B. HOFF KNIGHT has resumed his duties as Philadelphia district freight representative of the Cunard line having returned from France where he served during the war.

* * *

CAPT. JOSEPH E. GATLEY, district manager, Philadelphia-Delaware district of the United States shipping board, recently was elected a member of the Philadelphia Maritime exchange.

* * *

R. E. LOVEKIN has opened offices in the Penfield building, Philadelphia, where he will conduct advertising business.

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Marine News in a Personal Way

Intimate Gossip About What Leaders in the Maritime World Are Doing

HENRY M. ROBINSON, recently appointed member of the shipping board who succeeds CHARLES N. PAGE, brings experience which it is believed will be valuable in determining and carrying out the future policy of the government in regard to its merchant marine. Mr. Robinson, who had been assistant to Chairman Hurley from July, 1918, had been in charge of the preparation of studies relating to foreign trade and when the armistice came was given the duty of collecting shipping information for presentation at the peace conference. Last January he was summoned to Europe to relieve Commissioner Stevens as the American member of the allied maritime transport council and, upon Chairman Hurley's return to the United States, became special commissioner of shipping at the peace conference. Mr. Robinson is credited with having won for the United States the contention that interned German and Austrian shipping in this country when America went to war should go to the United States and not be pooled for distribution among the allies. To him also is credited the achievement of obtaining for the United States nine of the largest German liners in an arrangement with Herbert Hoover at the Brussels food conference, by which the ships were assigned to the United States in exchange for food. He won them on the plea of their being needed as transports, while England and France were forced to be content with smaller ships for cargo trade. Mr. Robinson, who grew up with the steel business in Youngstown—he was born at Ravenna, O., 51 years ago—was urged by Chairman Hurley to succeed Charles M. Schwab as director general of the Emergency Fleet corporation. This he declined and finally was prevailed upon to take the commissionership vacated by Charles R. Page of San Francisco. Mr. Robinson now maintains his residence in Pasadena, Cal.

* * *

S. J. JACKSON has been appointed general manager of the International Mercantile Marine Co., Boston, succeeding the late W. E. STEVENSON. Mr. Jackson was manager of the Leyland line's Galveston, Tex., office.

* * *

CAPT. A. G. ABBOTT is now associated with the Boston firm of Kelvin & Wilfrid O. White, as compass adjuster. Captain Abbott during the war was superintendent of painting at the Hog Island shipyard. He has been port captain for the New England Fuel & Transportation Co., at Boston, and commanded the steamship NEWTON, built for the coal trade between Chesapeake bay and New England points.

* * *

JOSEPH J. MCLEAN has been appointed vice consul to the Republic of Argentina at Boston, succeeding WILLIAM MCKISSOCK, resigned. Mr. McLean has been identified with shipping interests and is thoroughly familiar with duties of the new position. Until recently it has been necessary for Boston exporters to transact necessary business through the Argentine consul-general at New York.

* * *

V. S. HOGG, who has been assistant traffic manager of the Independent Steamship Corp., has resigned.

* * *

G. F. PARTRICK, who has been connected with Harriss, Magill & Co., New York, has resigned and will join the organization of the Atlantic Chartering Co., organized two years ago by Douglas Donald.

* * *

CAPT. CARL C. W. SEATON, manager of the Scandinavian department of the International Maritime Corp., New York, has gone to Copenhagen to look after the company's foreign interests. Sometime ago the International established active Scandinavian connections. Captain Seaton will return to New York in about four weeks. The International's plans contemplate considerable activity in the Scandinavian market it is said.

* * *

SAMUEL P. GOLDMAN has been elected president of the Merchants & Shippers' Insurance Co., New York, to fill the vacancy caused by the recent death of Isaac H. Klein. Other recently elected officers are: Vice presidents, Sylvan Bier and Louis J. Robertson; secretary, Samuel L. Martin.

* * *

E. A. MORSE has been elected vice president and general manager of the United States Steamship Co. to succeed his brother, B. W. MORSE, who recently resigned. E. A. Morse also is president of the Groton Iron Works, Groton, Conn., a subsidiary of the United States Steamship Co. B. W. Morse will continue on the board of directors of the steamship company and all other subsidiary companies. The resignation of B. W. Morse was due to a desire to re-enter the ship and shipping brokerage business, which work he gave up when the United States became involved in war.

* * *

H. H. GALLISON has resumed his duties as traffic manager of the United States & Pacific line. He recently returned from France after seeing over a year of active service.

* * *

CAPT. C. W. WILLETT, formerly United States inspector of hulls at Chicago, who served in the navy for a year and a half, has been appointed traveling inspector for the Great Lakes and the middle states. Formerly Captain Willett sailed on the lakes, his last command being the J. H. WADE of the Richardson fleet.

* * *

H. E. Henry, formerly sales manager of the Fulflo Pump Co., Blanchester, O., has accepted the position of sales manager of the Michigan Machine Co., Detroit. This company plans to manufacture pumps for machine tool and marine engine use.

* * *

R. E. WHEELAN, vice president of the Potter Transportation Co., is understood to have assumed the general management of the Triangle Steamship Co. Mr. Wheelan is well known in New York, South American and West coast shipping circles.

* * *

ROBERT W. BOSSEVIAN has been appointed European manager of the Anglo-American Commercial Corp. Formerly Mr. Bossevian was manager of the department of Holland and the Far East for the Kerr Steamship lines.

* * *

L. W. HERTZ is now vice president and general manager of the National Steamship Lines, Ltd., New York. Formerly Mr. Hertz was connected with the Moore & McCormack Co.

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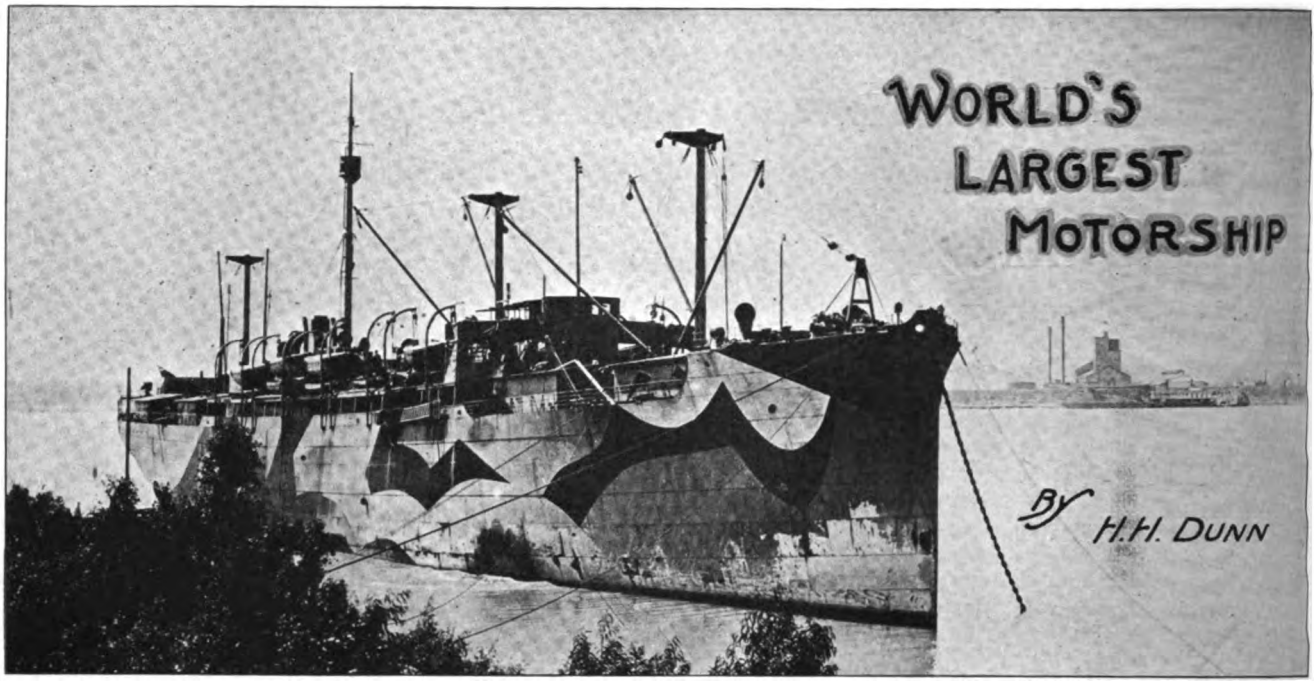

Clenapp, built by the Hollander-Wolfe Co., Glasgow, and now in the service of the British government, at anchor in New Orleans harbor

THE vessel shown in the accompanying illustration is the GLENAPP, at anchor in New Orleans harbor at the conclusion of a voyage from Liverpool. She is the largest motorship ever built and has a cargo capacity of 11,000 tons, or about 3000 tons greater than 90 per cent of the steamers that touch at New Orleans.

The GLENAPP was built in September, 1918, by the Hollander-Wolfe Co., Glasgow, Scotland, for the Glen line, of London. She is at present in the service of the British government. She is 470 feet long, 55 feet beam and draws 32 feet of water. She is all steel, braced with bulkheads every few feet. Her rudder is aluminum and steel. She looks, with her war paint on and her two 4-inch guns poking their noses over the stern, like a camouflaged scout cruiser. Her top speed is 17 knots and on her second trip from Liverpool to New Orleans, carrying 1500 tons of sand ballast, she averaged 14 knots. On her return from both the first and second visits to the Louisiana port, she was loaded to capacity.

She is the first of these "oil liners" to come into New Orleans from the other side, and is commanded by Capt. O. O. Simpson, of Glasgow, with T. F. Ingram as first officer. Her second trip across required 15 days, as she was held back by bad weather both in European waters and in the Gulf. She is powered with two diesel engines of 3000 horsepower each. She carries an engine-room force of 19 men—nine engineers, seven oilers and three electricians—against about 65 men for the same size steamer.

All controls and the steering gear are electric, small oil engines supplying the power for the dynamos. She is electrically lighted throughout. From the bridge, the captain or first officer has full control of the power plant. The Hollander-Wolfe company is building more ships of the same type for immediate service in the British merchant marine.

"The GLENAPP was an experiment," said the first officer while in New Orleans, "and, as she has proved a success in every way, British shipbuilders are proceeding with the construction of a number of vessels just like her. Ample cargo space, due to the smaller power plant; a comparatively small engine-room crew and cleanliness are some of the advantages we have found in this ship. I believe that eventually this type of ship will become generally popular, if the world's supply of petroleum holds out. From present indications an ample supply seems to be assured for many years to come."

Rolling Mill Equipment

The Mesta Machine Co., Pittsburgh, with works at West Homestead, Pa., has just issued an illustrated book giving a brief description of its plant and products consisting of heavy machinery for iron and steel works. The descriptive material is well prepared and presented, while the illustrations are clear in detail The introduction sets forth the location of the plant of the company, the fact that it covers more than 20 acres, all occupied by buildings, yards and equipment, and the domestic and world markets which the company supplies. Then follows a concise recitation of the various departments and their equipment, and the process of work in each department, and of the manufacture of the units, including laboratories, pattern and foundry departments, iron foundry, metal store yard, roll foundry, open hearth steel department, steel foundry, gear molding department, forge department, ship-shaft department, machine department, erecting department, roll turning department, and the gear cutting department.

The book then gives a list of the principal products manufactured and gives a brief description of the different kinds of equipment made. Products thus dealt with include gas blowing engines, steam blowing engines, automatic plate valves, gas power plant engines, corliss type engines, reversing engines, air compressors, barometric condensers and vacuum pumps, blooming mills, slabbing mills, plate mills, merchant bar and structural mills, wheel mils, tire mills, jobbing mills, sheet mills, tin plate mills, cold mills, pickling mills, gear drives, double helical cut tooth mill pinions, double helical cut tooth gears, straight cut tooth gears, machine molded rolling mill pinions, rope drives, flywheels, steam-hydraulic forging presses, steam-hydraulic shears, plate shears, bloom shears, vertical bar shears, lever shears, double shears for tin plate, squaring shears for tin plate, squaring shears for sheets, saws roll turning lathes and rolls. The book carries information of the kind sought by the trade and will serve as a permanent reference.

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Book Review

Abrasives and Abrasive Wheels, by Fred B. Jacobs; cloth, 340 pages, 5 x 8 inches; published by the Norman W. Henley Publishing Co., New York, and furnished by THE MARINE REVIEW for $3.

Abrasives and Abrasive Wheels contains valuable information for the shop or foundry superintendent and for the man who is engaged in the operation of grinding machinery of any kind.

The forepart of the book is devoted to natural and artificial abrasive materials such as emery, corundum, garnet, quartz, etc. Under the heading of artificial abrasives, the manufacture of carborundum and other well known manufactured abrasives is fully explained. The chapter on the manufacture of grinding wheels describes the lengthy process through which the material progresses until it is ready for shipment.

The testing of grinding wheels for efficiency is fully explained and illustrated by examples taken from actual working conditions. It is pointed out that by getting the right wheel in the right place, the manufacturer who is a large consumer can save thousands of dollars annually. In one chapter it is claimed that large wheels are more economical than small ones. The author has analyzed several popular sized wheels from a standard wheel list, determining the cubical contents and cost per cubic inch. It is shown that as the size increases the price decreases.

The subject of grinding wheel grits and grades, generally a confusing one to the average layman, is made plain. It is poinited out that grinding wheel manufacturers have never adopted a standard grade list and that such a procedure would save much confusion. With a view of hastening the adoption of a standard list, the author has included a table of standard grades of well known wheels, accurately compared. He explains how this list was prepared and comments upon its accuracy. A proposed standard grade scale is included in the chapter.

Other subjects treated include safeguarding grinding wheels, information for ordering grinding wheels, the design of dust collecting systems, etc. The latter part of the book is devoted to cylindrical, internal and surface grinding, cutter sharpening, etc. Several special grinding operations are fully described.

To Build Huge Transatlantic Liners

THAT America hopes to retain whatever grip she has lately been able to secure on merchant marine supremacy through the great war is indicated by the latest announcement of the United States shipping board, stating its intention of building two gigantic ocean liners, swifter and larger than anything afloat.

Plans for these large steamships, which will have a speed of 30 knots, already have been started, and as the result of a conference between former chairman Hurley, the chief constructor of the navy, and the presidents of the big shipbuilding yards, a formal communication has been addressed to the secretary of the navy, recommending the immediate appointment of a committee to supervise the details connected with the great undertaking.

The ships are to be classed as naval auxiliaries and with that end in view gun emplacements will be built into their decks ready to receive gun mounts and their batteries. The after deck will also be constructed with a view of transforming it into a landing and launching space for hydroplanes. The navy department is to supervise the building of the vessels, the shipping board, however, paying the expenses.

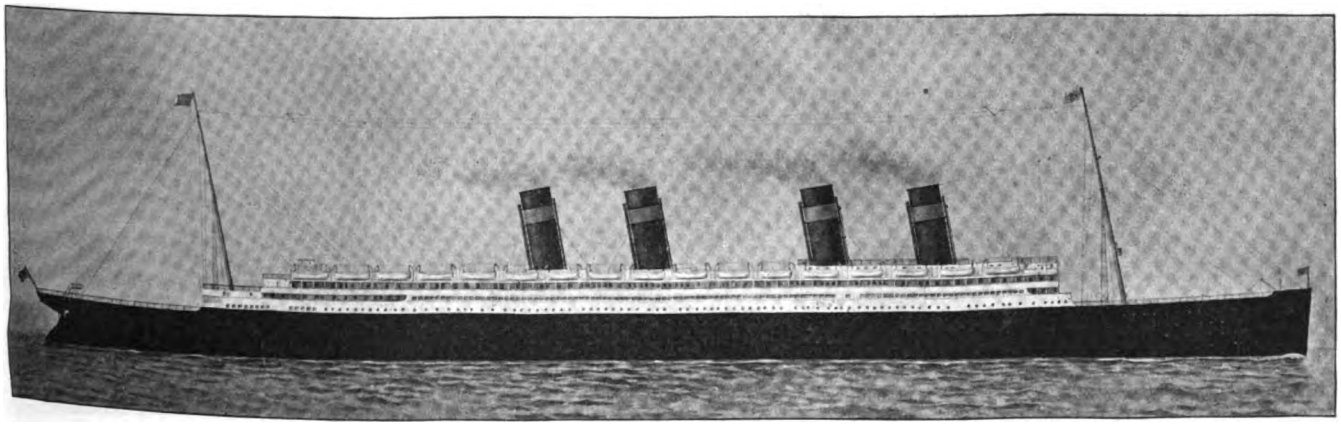
In his letter to Secretary Daniels, Mr. Hurley recommended that the following committee supervise the undertaking:

Admiral D. W. Taylor, chief of the bureau of construction, chairman; Homer L. Ferguson, president, Newport News Shipbuilding Co.; Joseph W. Powell, president Fore River Shipbuilding Co.; N. A. Neeland, president, New York Shipbuilding Co.; H. G. Mull, president, William Cramp & Sons Ship & Engine Building Co., and W. F. Gibbs, chief of construction of the International Mercantile Marine, who drew the plans for the liners.

Each of these gigantic vessels will measure 1000 feet in length, 50 feet longer than the LEVIATHAN, now the largest ship in the world, and will have a beam of 102 feet and a gross tonnage of 55,000. Each is to have a draft of 35 feet, a depth of 74 feet and will accommodate 1000 salon passengers, 800 second cabin and 1200 steerage. The crew will number 1000 officers and men.

The vessels are to be of the oil-burning type. They will be driven by four propellers upon which 110,000 horsepower will be exerted. They are to be fitted with an inner and outer skin similar to that of the White Star liner OLYMPIC. Moreover, they are to be divided and subdivided into compartments so numerous as to render them unsinkable.

The proposed American terminus of the two liners is Fort Pond bay, an indentation in the north shore of Long island, whose enormous depth makes it exceedingly desirable as a harbor for the great liners. New York, however, looks upon this plan with a jealous eye and has taken steps to advocate the docking of these massive vessels in New York harbor.



A REAL BID FOR MARITIME SUPREMACY—THE UNITED STATES WILL BUILD TWO LINERS LIKE THIS

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How British Women Fought the Huns

TO offset the ravages made upon British shipping by the ruthless piracy of the Hun undersea boats, it was necessary for England to enlarge existing shipyards and to establish and equip many new ones. Now that the German submarine campaign is a black record of history, England has prepared for the days of peace and she is making drastic efforts to retain her place as the greatest maritime nation of the world. Owing to the fact that her tonnage losses are enormous, it will probably take England years to bring her peacetime tonnage up to normal so that her shipyards will be busy for an indefinite period.

England was seriously handicapped for labor, both skilled and unskilled, and for this reason English women turned their hands to rough work, heretofore done only by male labor. Unskilled labor of the kind in question is called "navvy work" by the English and in describing this kind of labor, *Engineering*, London, states: "Labor is very scarce with us and we have to draw largely on our female population which, in spite of their hearty good will, can never be really efficient in navvy work."

This statement, of course, is true for while it has been established that women may endure more fatigue than men, and at the same time "stay on the job", they are not what an American gang boss would term husky enough to show the same efficiency as men.

The accompanying illustrations show building operations at the new Furness Shipbuilding Co.'s yard, located on the northeast coast of England. They were made from official British photographs issued by the Associated Illustration agencies, London, and were supplied to THE MARINE REVIEW through the courtesy of *Engineering*.

Work on the new Furness yard was begun March, 1918, and progressed under difficulties, owing to the fact that much of the site was under water at high tide. However, there were numerous slag and shale heaps in the vicinity, which furnished material for building roadbeds for industrial railways at frequent intervals over the site. The intervening ground was then filled in and eight building berths have been constructed.

To build a shipyard of eight building berths is not a large undertaking in normal times, but when it is considered that this work was done almost entirely by women, it reflects great credit on the engineers who directed the work and upon the patriotic women who willingly turned their hands to the hardest kind of labor to release men for the front.

Women labor was used extensively at the Furness yard. They fed concrete mixers, laid ballast, ties and rails, filled in low ground and have excavated a site for a dock which accommodates several vessels at once.

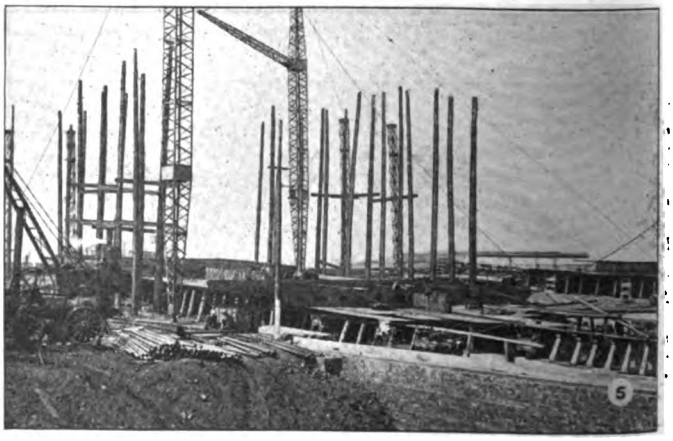

FIG. 1—WOMEN NAVVIES BALLASTING A RAILROAD TRACK. FIG. 2—KEEL AND BOTTOM PLATING OF THE SECOND VESSEL TO BE LAID DOWN IN THE BACKGROUND—IN THE FOREGROUND, WOMEN PREPARING TO LAY A PIPE LINE. FIG. 3—WOMEN EXCAVATING FOR A WET BASIN. FIG. 4—GENERAL VIEW OF THE FURNESS SHIPBUILDING CO.'S NEW PLANT. FIG. 5—WOMEN FEEDING A CONCRETE MIXER

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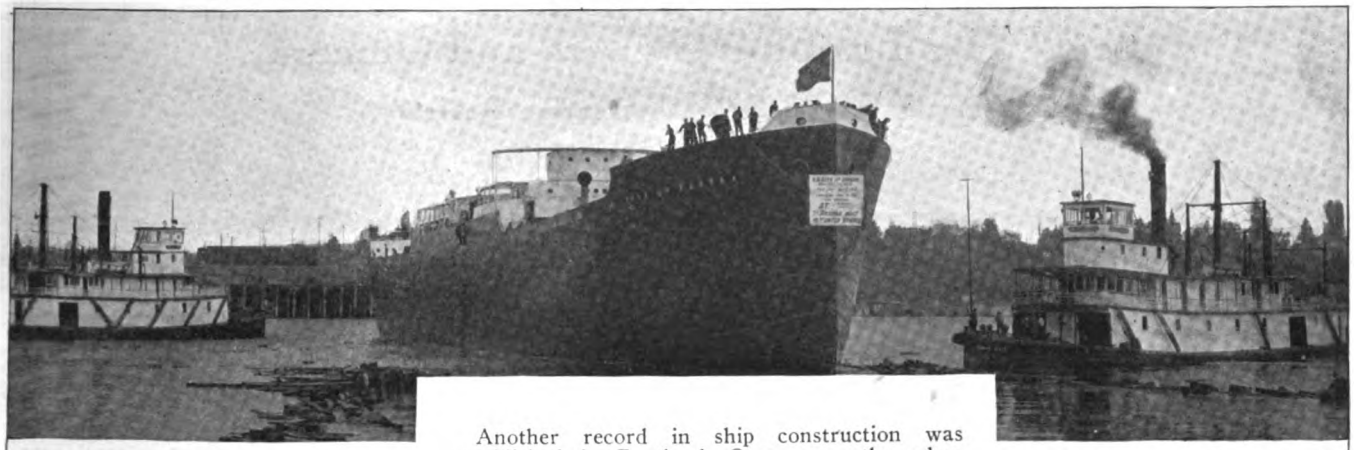
Completes Ship in Thirty Seven Days



Another record in ship construction was established in Portland, Oreg., recently, when the Columbia River Shipbuilding Corp. launched the steamer CITY OF EUREKA. This 8800-ton steel vessel was built in 27 days flat, a record for the United States. The builders allowed 10 additional days to get the vessel in complete readiness for service. After only 37 working days, the installation of all equipment was completed and the CITY OF EUREKA was ready for sea. Because of this record, the launching of the CITY OF EUREKA was an occasion of more than usual importance among Pacific coast shipbuilders. Mayor George L. Baker of Portland, participated in the ceremony and the vessel was christened by Mrs. Alfred F. Smith, wife of the president of the shipbuilding company. As the vessel went down the ways a placard just above the water line was conspicuous with this inscription: "S. S. CITY OF EUREKA, 8800-ton, deadweight, vessel. Keel laid April 4, 1919. Launched May 8, 1919. Time consumed 27 working days. The record boat for the United States."

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Late Decisions in Maritime Law

Legal Tips For Ship Owners and Officers

Specially Compiled for The Marine Review
By Harry Bowne Skillman
Attorney at Law

AFTER declaring, in the case of WALTER ADAMS, reported in 253 *Federal Reporter* 20, that a contract cannot afford the necessary basis for a maritime lien, unless it is maritime in its nature, so as to be cognizable in admiralty, and that it is not enough that the contract is maritime as to some of its provisions, but must be maritime in its entirety, the court held that admiralty has no jurisdiction over breach of a contract to furnish owners of 19 fishing steamers such coal as the 19 vessels might require during the season; such contract was not maritime in character, in that it did not begin and end in the necessities of a particular vessel for her own voyage. It was further decided that "Where specific supplies or materials have been furnished to the owner upon a distinct understanding that they were for a specified vessel, and the owner has, on delivery to him, appropriated them to the vessel so designated between the parties," they have been furnished to her in the sense of the act of June 23, 1910, giving a maritime lien for supplies furnished to vessels.

* * * *

The sailing vessel ALLANWILDE began a voyage under a charter party to transport a cargo to a port in France, but, under the stress of a heavy gale, was compelled to seek a port of refuge and return to the port from which it started, which return, it was decided in 247 *Federal Reporter* 236, was justified, and neither the vessel nor the owner could be charged with fault in that respect. Between the dates of leaving and returning to port, the exports administrative board—a federal agency—promulgated a rule refusing clearance to sailing vessels destined to proceed through the war zone, which rule while it remained in force prevented the vessel from resuming the voyage. The shipowner then abandoned the voyage and notified the shipper to unload the cargo, which was done under protest. The shipowner refused to return the freight money, claiming that it had been earned under a provision of the charter party, reading as follows: "Freight to be prepaid net on signing bills of lading in United States gold or equivalent, free of discount, commission, or insurance. Freight earned retained and irrevocable, vessel lost or not lost." The court decided that the shipper was entitled to a decree for the return of the freight money, and, in argument, said that the return of the vessel to the port of departure did not absolve the shipowner from carrying out the charter party, that as to that obligation it was the same as if the vessel had never left its dock. "The governmental embargo is not directed against cargoes of the kind covered by this charter party, but against sailing vessels entering particular waters known as the 'war zone.' In my judgment the reciprocal rights and obligations of the parties at the time of the government's embargo are to be determined as if the vessel had never started on its voyage. The embargo did not prevent a transshipment of the cargo, or prevent the shipowner retaining the cargo awaiting a lifting of the restriction." It was then said that the shipowner's failure to transship the cargo or to retain same awaiting lifting of the restriction, and its refusal to give up the freight money constituted a breach of maritime duty. The clause "freight earned, retained, and irrevocable, vessel lost or not lost" can not mean that prepaid freight is earned the moment it is paid, regardless of any forwarding of the cargo. To absolve itself of all obligations to forward the cargo, mediately or immediately, in order to have the use of the vessel for other purposes, the shipowner should at least have returned the freight money which had been paid as compensation for its transportation. Such a return and sharing of the losses incurred in consequence of the embargo is deemed equitable. In such circumstances the shipowner loses the expense of loading the vessel, its use until unloaded, and the opportunity to earn the freight money under the charter party, and the shipper loses the expense of unloading and the benefit of the lesser freight rate secured by such contract.

* * *

Where tackle, including the clevis, was furnished stevedores by the ship, it owed the duty to the stevedores to use reasonable care to see that the tackle was in fit condition for use. This would require of the ship to use reasonable care to inspect the appliances furnished, before they were used and, if such reasonable inspection would have disclosed the defect before the clevis was used by the stevedores, the ship would have been negligent in failing to make the discovery and in furnishing the defective clevis.—EMILIA S. DE PEREZ, 248 *Federal Reporter* 480.

* * *

The "restraint of prices" clause in bills of lading or charter parties was construed recently in the three cases of GRACIE D. CHAMBERS, 253 *Federal Reporter* 182, BRIS, 253 *Federal Reporter* 259, and ADRIATIC, 253 *Federal Reporter* 489. In the first of these cases it was decided that the act of the United States government in refusing clearance papers to sailing vessels, any part of whose voyages would bring them within the submarine danger zone, amounted to a "restraint of prices," so that the carrier was entitled to retain prepaid freight. In the second case it appeared that libelant shipped varnishes, prepaying freight and receiving a bill of lading which released the carrier from loss through restraint of rulers or people, and provided that prepaid freight be considered as earned and retained by the carrier, "vessel lost or not lost." After loading the United States refused a license to ship. Under these circumstances it was held that the carrier could retain prepaid freight. In the third case the court decided that under the clause, a foreign ship is released from the charter by the actual exercise of the control or restraint through requisition by her home government, and that a court of this country cannot question the legality of its exercise.

* * * *

The workmen's compensation act of the state of Rhode Island, which in actions against an employer who has not accepted its terms provides a different measure of compensation from that of the maritime law, does not apply to a seaman injured while employed on a vessel on the navigable waters of the United States.—Barrett v. Macomber & Nickerson Co., 253 *Federal Reporter* 205.

* * * *

The question of retaining prepaid freight was in issue in the case of GRACIE D. CHAMBERS, reported in 253 *Federal Reporter* 182, where it was decided that freight is earned only upon delivery of cargo, and that in the absence of a provision in the bill of lading to the contrary, freight must be returned, if for any cause the cargo is not delivered. In making this decision, the court said: "By our law freight is earned only upon delivery of cargo. The ship may have carried the cargo on a voyage of 3000 miles, and to within one mile of destination; but the carrier has earned no freight, and must return any freight prepaid if he has not delivered. The parties, of course, may agree upon a different rule, and for that purpose a clause has been introduced into bills of lading and charter parties from time out of mind that prepaid freight shall not be returned 'ship lost or not lost.' The clause variously phrased is intended to cover all contingencies. If only the loss of the ship were contemplated, the additional words 'or not lost' would be meaningless. What the parties intend is that the carrier shall keep the freight, even if he does not deliver the cargo, unless the failure to deliver be due to the carrier's fault, or to a peril not excepted in the bill of lading or charter party?"

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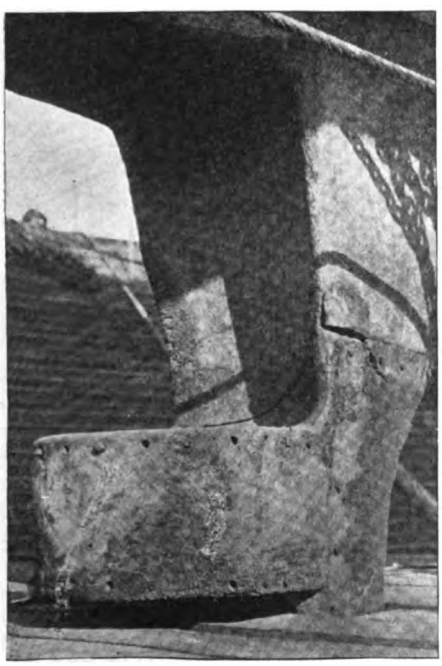
Welds Large Stern Frame Casting

Vessel Was Drydocked and Mold Was Built Around the Break Which Was Welded by Means Thermit Reaction—Results Were Satisfactory

WHEN the army transport NORTHERN PACIFIC ran aground off Fire island on Jan. 2, 1919, she sustained injuries that required drydocking to complete the necessary repairs. Examination disclosed that her machinery was disabled and that a number of her plates were bent. The most serious break, however, was on the cast steel stern frame just above the uppermost rudder gudgeon. At this juncture the sternpost was cracked, the cross section of the break forming a triangle each side of which was about 2 feet in length.

It was finally decided to weld the break by the thermit process. To those who are unfamiliar with this process it may be explained that thermit is a mixture of aluminum and iron oxide. This mixture can be ignited by means of special ignition powder and on reaction produces superheated liquid steel and slag (aluminum oxide), at a temperature of approximately 5000 degrees Fahr. This thermit steel is sufficiently hot to melt and dissolve any metal with which it comes in contact and amalgamates with it to form a solid, homogeneous mass when cool. In making welds by this process the parts to be united are surrounded by a mold and the sections heated red hot by means of a special preheater, after which the steel is readily poured into the mold.



BREAK IN THE STERN FRAME TO BE REPAIRED

The sternpost break was situated in an overhanging place about 20 feet above the floor of the drydock which necessitated the construction of a substantial scaffolding to provide a steady support for a mold box. This scaffolding consisted of a 16 x 16-foot wooden platform, erected just below the level of the crack.

Break is Measured Carefully

To provide a space for the thermit to enter in bulk and form a perfect amalgamation with the broken parts a 3-inch gap at the break was cut with an oxy-acetylene torch. Careful measurements indicated that the two parts had already separated a sufficient amount to make up for the contraction of the weld as closely as that contraction could be estimated in advance.

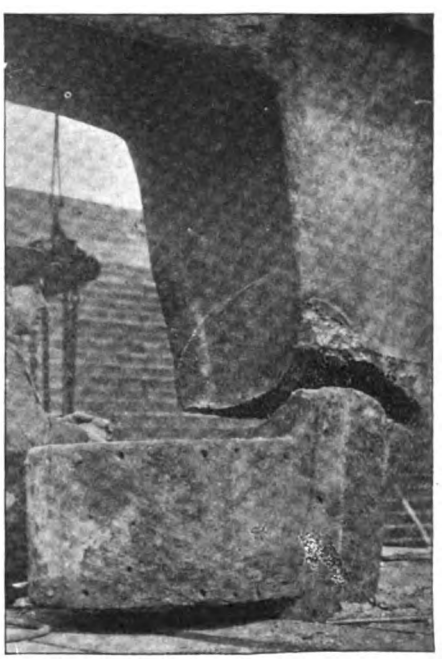
In order to reach the hollow interior of the casting for the purpose of supplying wax for the inside part of the wax pattern and for building up the inside of the mold it was necessary to cut about 4 square feet of plate out of the ship's inner hull with an oxy-acetylene torch. After applying yellow wax to the inside of the broken section and placing a layer of wax on the floor of the hollow casting, molding material was deposited inside the casting and rammed up with a pneumatic rammer, to a depth of 24 inches. Provision was made against the falling down of the molding material after the wax had burned out by inserting against the inside wall of the casting 5/8-inch iron gaggers bent inward at right angles to support the mold. The facing material placed adjacent to the wax consisted of one part fire clay, one part ground fire brick, and one part fire sand. A wooden cylindrical riser pattern was vertically connected with the wax on the floor of the casting.

How the Mold Was Made

The interior of the casting having been rammed up, wax was next applied to the outside of the cut out gap. A wax pattern was formed varying from about 1½ to 2 feet in width, and bowed upward on each side of the triangular casting at points where contact with risers was later to be made. Sixty-seven pounds of wax were required altogether for the wax pattern. On completion of the wax pattern a mold box was next constructed by cutting out the desired sizes of sheet iron with an oxy-acetylene flame, and bolting them into position. The finished mold box, with its base resting on the platform, had a rectangular trough-like shape and measured 48 inches high, 51 inches on the sides parallel with the ship, 54 inches wide at the base and 10 feet wide on top. In ramming up the mold box the total quantity of molding material used amounted to 40 barrels of backing material and six barrels of facing material.

Heating gates were provided by inserting cylindrical wooden patterns through the bottom of the box on both sides and in the rear of the weld. Pouring gate patterns were connected diagonally downward through the top of the mold with the wax pattern. For outside riser patterns a small narrow piece of a wooden plant was inserted close against each side of the triangular sternframe section and connected with the wax pattern below. These outside risers served the special purpose of supplying molten metal for the thermit collar during cooling shrinkage and thus prevent the thin casting shell at this point from sloughing away. All wooden and pipe patterns were removed before preheating.

The suspension of the two crucibles with their extension rings over the mold box was accomplished by re-



GAP CUT TO ACCOMMODATE NEW METAL

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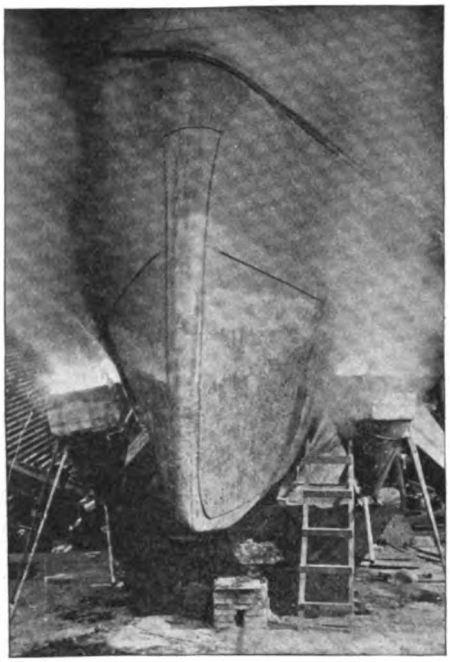


REACTION DURING THE MOLDING PROCESS

moving a rivet from the hull of the ship on each side, at about 10 feet above the top of the mold box, and inserting eye bolts in these holes, from which chain hoists suspended the crucibles. As extra heat and fire precautions asbestos was wrapped around the chains holding the crucibles, and asbestos sheets placed between each crucible and the hull of the ship. Molding sand was scattered over the platform to prevent its catching fire.

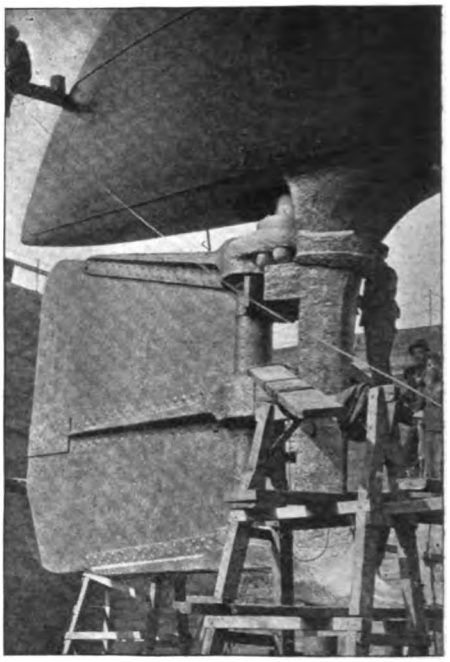
At 8:15 a. m. on the day of the reaction, the operation of preheating the mold was started. The object of preheating was for the purpose of drying out the mold, burning out the wax pattern and for heating up parts of the steel at the location of and adjacent to the weld in order to secure a uniform contraction on cooling. Two gasoline and compressed air preheating torches were directed through the sides of the mold box, a third down through the riser opening in the interior of the casting.

The preheating was kept up steadily for seven hours. By 3:15 p. m. the broken sections had developed a bright heat. Pressure was then turned off and the heating gates on the sides of the mold plugged up with clay.

Reaction is Started

Both crucible reactions were set off simultaneously by men stationed on ladders at each crucible. At 3:30 p. m., on signal, each man ignited with a red hot rod the teaspoonful of ignition powder which lay on top of the thermit.

About 45 seconds were allowed for the liquid steel to form from the reaction, after which time the two assistants tapped the crucibles by knocking up the tapping pins with long iron rods, thus allowing the molten steel to escape into the mold. The platform had been well sprinkled with sand and there was no danger from fire. The stray pieces of aluminum oxide slag were quickly covered with sand and were thus rendered harmless.



WELD COMPLETE AND RUDDER IN PLACE

The weld was allowed to anneal itself by cooling slowly, the mold box not being dismantled until the following day. When the molding material was finally cleared away, the risers and gates cut off with an oxy-acetylene torch and the weld examined by chipping off pieces of metal, the thermit steel was found to be a fine quality and appearance. The weld was then accepted by the navy yard representatives as being entirely satisfactory, after which the vessel was put in commission.

Yankee Ship Tries to Invade a Harem

VESSEL masters who have sailed in Oriental waters often bring back strange tales of adventure on foreign shores and the story of how an American ship tried to invade the harem of the sultan of Turkey was related by Capt. Richard Willowden, who commands the WEST ZEDA, an 8800-ton western-built vessel which was used by the American Red Cross to carry flour and other provisions to the Roumanians.

Heavy weather compelled Captain Willowden to anchor his vessel off a mass of buildings near Constantinople. The tide ran strong at this point which caused the craft to drag her anchors and to head straight for the sultan's harem. She brought up against a cement embankment and brick wall which gave way against the onslaught.

Tradition has it that the sultan's harem is quartered amidst all the luxuries of Oriental splendor wherein marble halls, cool fountains, thick carpets, etc., play an important part. However, at the present time, the ruler of the Turks is, to use the popular expression, "out of luck." For this reason his harem was quartered in a 5-story "wooden palace."

When the WEST ZEDA came through the wall, the sultan's flock of wives seemed to be under the impression that the vessel intended to ride overland right through the palace and pandemonium immediately resulted. It is said that Oriental women never appear in public without their veils. In this instance, however, so great was their hurry that they jumped from the lower windows of their quarters without waiting to don veils.

In a short time the courtyard about the palace was filled with wildly gesticulating, excited women much to the amusement of the WEST ZEDA's crew. The scene was described as not unlike a comic opera chorus that was somewhat disorganized. It is reported, however, that the vessel's crew was not greatly impressed with the beauty of Oriental women, fat, slender, or otherwise. After the excitement died down, and the women found that their quarters were not in immediate danger of being demolished, they hastily hid themselves from the gaze of the "unbelievers."

As the result of attempting to demoralize the sultan's harem, the WEST ZEDA stripped all four blades from her propeller and sustained other damage which, however, was not serious. She was towed to Gibraltar for repairs.

Four sections of the 6-section floating dock of the Savannah Dry Dock & Repair Co., Savannah, Ga., have recently been launched, put in commission, and several vessels successfully docked. This dock was designed by the Crandall Engineering Co., East Boston, Mass. When the six sections are completed this dock will measure 440 feet over the keel blocks and 89 feet between the walls.

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New Type Freighters

(*Concluded from Page* 414)

the Isherwood system of framing. They have short poop, a bridge house extending over the machinery space, and a topgallant forecastle. Each has two pole masts, which are fitted with four 5-ton booms each in addition to the 30-ton boom on the foremast.

The main engines consist of two steam turbine generators, connected to motor aft geared to shafting designed to develop sufficient power to propel the ship at 11 knots per hour when loaded. These turbine engines are capable of 3000 shaft horsepower. The propellor is a 4-blade right-hand sectional wheel with cast iron hub and cast steel blades. The deck machinery, which consists of the usual windlass, winches, steering engine and warping winch, is steam driven. The anchors, chains and lines are in accordance with Lloyd's rules.

The boiler plant consists of water tube boilers with sufficient units to give approximately 117 square feet of grate area and 7800 square feet of heating surface. They are tested for a working pressure of 210 pounds. A forced draft system has been installed, and the boilers are fitted for using coal. The evaporator and feed pump has a capacity of not less than 25 tons in 24 hours. The refrigerating plant consists of one 2-ton motor driven ice machine. The shop machine tools consist of one lathe, one drill press and a shaper, with equipment.

The turbine driven electrical apparatus is of a sufficient size for handling lighting, wireless, refrigerating machine and work shop. When commandeered by the shipping board, it was decided to alter the plans in four minor instances. The bridge was lengthened and the cargo hatches increased in size. The government is still retaining possession of these vessels, their ultimate disposition being held in abeyance.

Soo Canal Report

The total movement of freight through the Soo canal for July was 11,916,152 net tons, which is an increase of 696,736 tons over the amount carried in June of the current year. When compared with the shipments for July of last year, which were 13,362,344 tons, a decrease of 1,446,192 tons is shown. The iron ore movement shows an increase over the amount carried in June of 900,532 tons. Copper shipments show a slight decrease. During June, 8024 tons were carried through the Soo, while the amount recorded for July, 5647 tons, shows a decrease of 2377 tons. Lumber is coming forward more freely, a gain of 3152 feet over the shipments for June being shown. Wheat shipments are lagging, the figures for June being 6,402,051 bushels, which compared with 2,391,840, the shipments for July, show a decrease of 4,010,211 bushels. The tonnage figures for the past six years follow:

July,	1919	11,916,152
July,	1918	13,362,344
July,	1917	13,650,047
July,	1916	14,048,494
July,	1915	9,719,237
July,	1914	8,830,256

Of the total freight carried in July, 11,382,775 tons were handled through the United States canal, while 533,377 tons passed through the Canadian canal.

The following tabulation gives the figures in detail for 1919 and 1918:

	To Aug. 1, 1919	To Aug. 1, 1918
EASTBOUND		
Lumber, M. feet B. M.	116,505	139,514
Flour, barrels	2,857,574	3,524,314
Wheat, bushels	54,619,007	12,245,812
Grain, bushels	27,341,324	13,481,607
Copper, net tons	17,613	42,387
Iron ore, net tons	24,679,059	29,227,120
Pig iron, net tons	3,373	.....
Stone, net tons	21,800	.....
Gen'l merch., net tons	36,107	27,076
Passengers, number	13,633	6,811
WESTBOUND		
Coal, soft, net tons	6,959,811	5,736,682
Coal, hard, net tons	962,789	668,886
Iron ore, net tons	45,949	49,312
Mfgd. iron and steel, net tons	61,008	18,798
Salt, net tons	45,545	39,182
Oil, net tons	194,418	149,034
Stone, net tons	58,650	273,718
Gen'l merch., net tons	196,664	182,447
Passengers, number	14,073	6,521
SUMMARY		
Vessel passages, number	9,197	9,298
Registered tonnage, net	26,296,516	28,504,591
Freight:		
Eastbound, net tons	27,550,183	30,522,858
Westbound, net tons	8,524,874	7,088,039
Total freight, net tons	36,075,057	37,610,897

July Lake Levels

The United States lake survey reports the monthly mean stages of the Great Lakes for July, 1919, as follows:

	Feet above mean sea level	
	June	July
Superior	602.45	602.58
Michigan-Huron	581.50	581.34
St. Clair	576.45	576.24
Erie	573.77	573.45
Ontario	247.95	247.75

Lake Superior is 0.13 foot higher than last month, 0.34 foot higher than a year ago, 0.18 foot above the average stage of July of the last 10 years.

Lakes Michigan-Huron are 0.16 foot lower than last month, 0.60 foot lower than a year ago, 0.45 foot above the average stage of July of the last 10 years.

Lake Erie is 0.32 foot lower than last month, 0.86 foot higher than a year ago, 0.67 foot above the average stage of July of the last 10 years.

Lake Ontario is 0.20 foot lower than last month, 0.90 foot higher than a year ago, 0.96 foot above the average stage of July of the last 10 years.

July Ore Shipments

Shipments of iron ore showed a gain during the latter half of July, bringing the total for the month up to 9,173,429 tons. This total is the highest so far this year, surpassing June by 1,200,000 tons. In July of last year the ore fleet set a record by moving 10,659,203 tons. Total shipments to Aug. 1 are 25,181,848 tons compared with 29,608,933 tons in the corresponding period last year, a decline of 4,427,085 tons.

Detailed figures of shipments by ports are:

Port	July, 1919	To Aug. 1, 1919
Escanaba	1,007,036	2,421,563
Marquette	443,850	891,726
Ashland	1,176,553	2,944,845
Superior	2,244,907	5,486,468
Duluth	3,122,098	9,821,136
Two Harbors	1,178,985	3,616,110
Total	9,173,429	25,181,848
1919 decrease	1,485,774	4,427,085

Lake Erie Receipts

Out of a total of 9,173,429 tons shipped from upper lake ports in July, Lake Erie ports received 7,250,619 tons, as shown by figures compiled by THE MARINE REVIEW. The balance on dock Aug. 1, was 7,069,893 tons against 7,228,721 tons on Aug. 1, 1918. Detailed figures are:

Port	Gross tons
Buffalo and Port Colborne	930,597
Erie	180,503
Conneaut	1,234,669
Ashtabula	1,777,531
Fairport	375,622
Cleveland	1,431,818
Lorain	627,089
Huron	246,788
Toledo	289,974
Detroit	156,028
Total	7,250,619

Issues Export Guide

The third edition of the *Export Register,* issued by the Export Manufacturers of the United States, New York, recently was published. It is half cloth and leather bound and contains 837 pages. The book was compiled to enable those interested in foreign trade to make a careful study of export commission houses with a view of determining which are best prepared to handle their particular goods in given markets. Detailed reports on more than 800 of the leading export houses, who have their own offices, agents, correspondents, etc., in the various countries in which they operate, are given. These reports include the ratings, markets to which the commission houses ship and the lines in which they specialize.

Christened with crude oil from the oil fields of Oklahoma, the steamer TULSA, recently took the water at Hog Island. She is 400 feet long, 50 feet beam and is capable of logging 11½ knots an hour.

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Practical Ideas for the Engineer

Repairs German Liner—Refits Wrecked Ship—Joining Sectional Vessels —Oil Strainer—Electric Drive for Battleship—Adjustable Die Holder

REBUILDING of the steamer CALLAO, one of the first of the ex-German interned steamers to arrive at the canal zone from Peru, has been completed, and the ship has been accepted by the marine superintendent, for the United States shipping board, according to the *Panama Canal Record*.

Prior to her departure from the Balboa plant for New York, via the canal, this vessel underwent a successful trial trip during which her machinery was operated to maximum capacity. The CALLAO, formerly known as the SIERRA CORDOBA, of the North German Lloyd Steamship Co., was one of the four best equipped passenger vessels of that company, plying between Bremen and Buenos Aires.

The vessel is fitted with two triple-expansion, 3-cylinder, reciprocating engines, driving twin screws, power being furnished by four marine-type Scotch boilers at a working pressure of 200 pounds. The boilers are operated with coal as fuel and are fitted with a forced draft system. The auxiliary machinery consists of the usual pumps, such as feed, bilge and ballast, fire, ash ejector, and sanitary; one evaporating and distilling plant, two 60-kilowatt direct-current generator sets, one auxiliary condenser, one ash hoist engine, one disinfecting machine, and one main and one auxiliary steering engine, fitted with control gear for ready manipulation. When this vessel was towed into Balboa by the dredge CULEBRA, which had been dispatched to Peru for that purpose, she was in a dilapidated and crippled condition due to her long internment and to destruction wrought by the German crew. Practically no work of repairs had been carried on after Germany's declaration of war, leaving the hull in poor condition and badly corroded.

Destruction Was Systematic

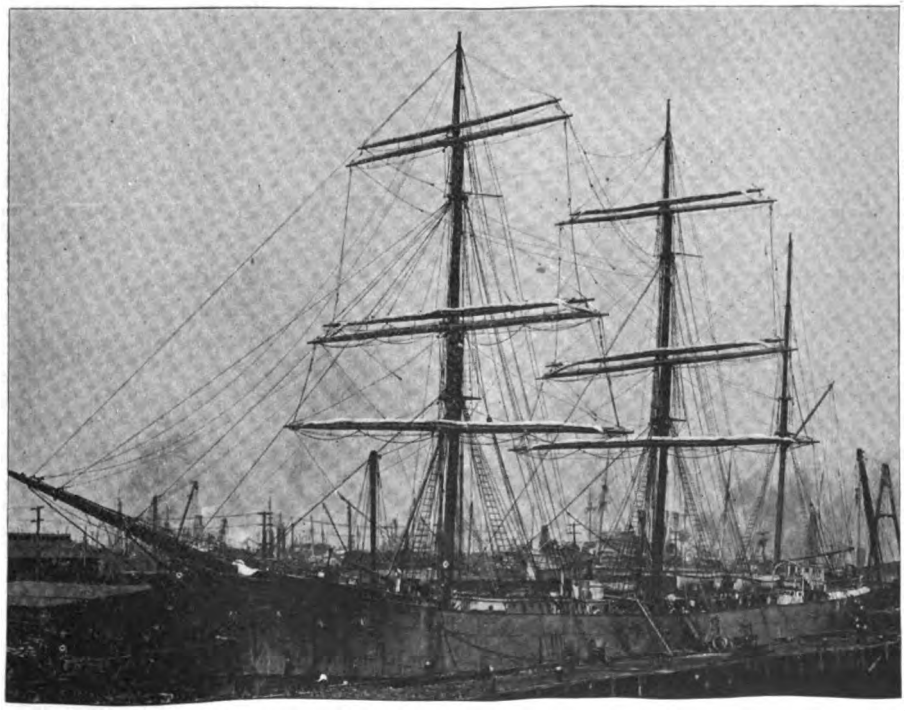
The destruction of the main and auxiliary machinery was carried out in a most systematic and thorough manner by her former operators. Cylinders of the propelling engines were badly damaged by explosives; main valves, air-pump gear and other miscellaneous brasses and fittings were dismantled and thrown overboard. Important and essential castings of the auxiliary machinery suffered a similar fate by sledge, or could not be accounted for. Especial care was taken to destroy or remove such parts as would render extensive design work necessary for their replacement.

Water had been removed from the main boilers and fires burned in the furnaces to their full capacity in an endeavor to destroy them. Complete destruction was only prevented by the presence of super-heating tubes with which the boilers' flues were fitted. All furnace fittings, however, were destroyed; riveted joints, boiler stays, and tubes damaged.

As microscopic, physical, and chemical tests on various speciments of boiler plate showed the steel still to be of good quality and unaffected by the heat, the boilers were rebuilt, using new rivets, stays, and tubes. The furnace fittings were readily replaced by the canal foundry. Stack, uptake, and forced draft duct repairs proceeded simultaneously with those of the boilers. The complete equipment was then lowered into the ship by the crane AJAX. As hydrostatic and steam tests of the completed boiler plant indicated excellent workmanship, no delay was experienced in placing the entire machinery department under steam.

Patches in the meantime had been fitted to the main engine cylinders to replace parts broken, missing or broken beyond repair. Cast iron liners were then inserted in the cylinders to take the pressure strains in the cylinder barrels; damaged ribs and flanges were built up by the electric welding process and machined so that when finished, the cylinders were substantially repaired and in serviceable condition.

Through the designing of the missing parts, renewing parts from samples and repairing castings by electric and acetylene welding processes, the vessel, taken in a wrecked condition, was repaired and turned over to the United States shipping board, equal in all respects to her original design. This work represented approximately 400 separate jobs, all completed within six months after her arrival at the Balboa shops.



BARK GRATIA WRECKED OFF THE VIRGINIA CAPES AND COMPLETELY REFITTED AT NEW YORK

Refits Wrecked Ship

Last June a 3-mast steel bark sailed out of New York. Her owners had purchased her as a wreck, paying $30,000. When repaired they refused an offer of $300,000 for her. A few months ago the dismasted and battered hulk of what was once the 4-mast steel bark GRATIA was abandoned off the Virginia capes to the salvers. As she rolled, rail-deep, in the trough of the sea, the French-American Steamship Co. made an offer of something like $30,000 for her. The bid was accepted.

The resurrection of the GRATIA was accomplished in the Brooklyn yard of the Tebo Yacht Basin Co. New steel

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masts were stepped, repairs were made to her deck and hull and when she was ready for sea again Lloyd's gave her A1 rating, and under the ancient wreck law she automatically became entitled to American registry and to fly the American flag.

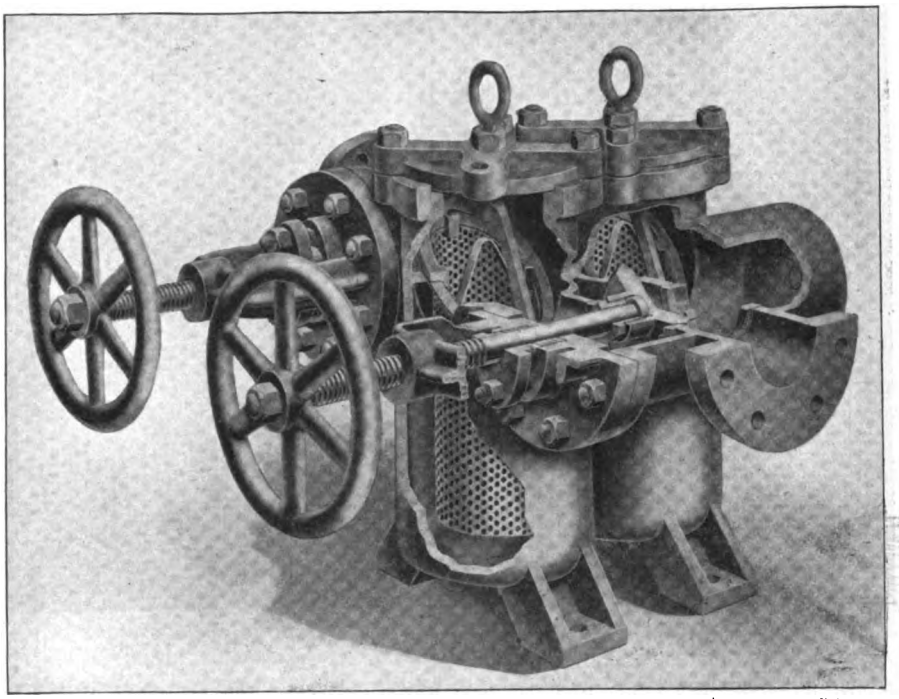
The GRATIA is a steel bark of 1583 gross tons, built in 1891 by Russell & Co. at Port Glasgow. She is 249.7 feet in length, 38.2 feet beam and 21.6 feet depth. Prior to her acquisition by the French-American Steamship Co. she was operated under Norwegian registry. Her new owners started her for the River Platte to load grain for Copenhagen.

Joining Sectional Vessels

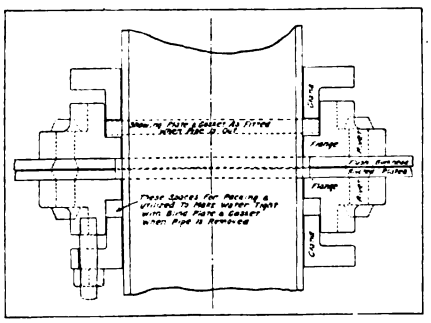
In developing plans for building vessels on the Great Lakes to be taken in sections to tidewater, James Nacey, a marine architect of Cleveland, has paid special attention to the means for aligning the vessel sections previously to joining them and to the method of stopping holes in bulkhead plating through which it is necessary to run ballast piping.

For aligning the sections, the device shown in the lower illustration is used. Cast-steel pads are fastened to the bulkhead plating, the outer ends of which are machined to fit ball joints. The bolts that draw the ship sections together run through these ball joints and as the nuts are tightened, it is obvious that the sections will be brought into alignment. In this illustration, the properly aligned sections are shown at the left while at the right is shown the condition that is generally present just after the sections have been floated together.

The upper illustration shows a form of joint applied to the bulkhead in places where it is necessary to run ballast piping. After the piping is removed, the gland, which is equipped with studs and nuts, holds a plate and gasket in place, making the section watertight. The flanges, in which the glands are fitted, are bolted to the bulkhead plating and when the pipe is taken out the packing space is filled with the plate and gasket. This arrangement is adapted to piping with screw flanges. Mr. Nacey has also worked out a device for closing the holes in question when flanged piping is used.

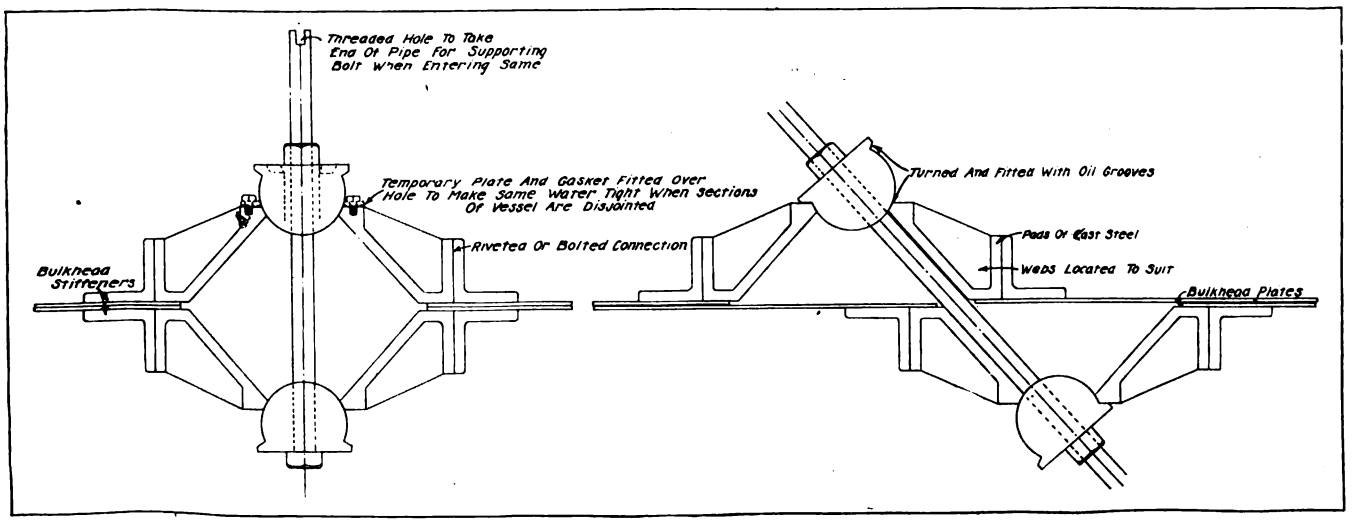


DEVICE FOR STRAINING FUEL AND LUBRICATING OIL—BASKETS HOLD FOREIGN MATERIAL



Oil Strainer

The device shown in the accompanying illustration is a duplex oil strainer recently developed by the Griscom-Russell Co., New York. It is designed for installation in the suction or discharge lines of lubricating or fuel oil systems for the removal of solid foreign material in suspension. Such foreign material, if not removed, it is pointed out, makes the lubrication inefficient and may seriously damage bearing surfaces. Similarly,


Threaded Hole To Take End Of Pipe For Supporting Bolt When Entering Same
Temporary Plate And Gasket Fitted Over Hole To Make Same Water Tight When Sections Of Vessel Are Disjointed
Riveted Or Bolted Connection
Bulkhead Stiffeners
Turned And Fitted With Oil Grooves
Pads Of Cast Steel
Webs Located To Suit
Bulkhead Plates

THE UPPER ILLUSTRATION SHOWS THE METHOD USED FOR MAKING PIPE HOLES IN BULKHEADS WATERTIGHT—THE LOWER ILLUSTRATION SHOWS THE TYPE OF BOLT USED FOR DRAWING VESSEL SECTIONS TOGETHER

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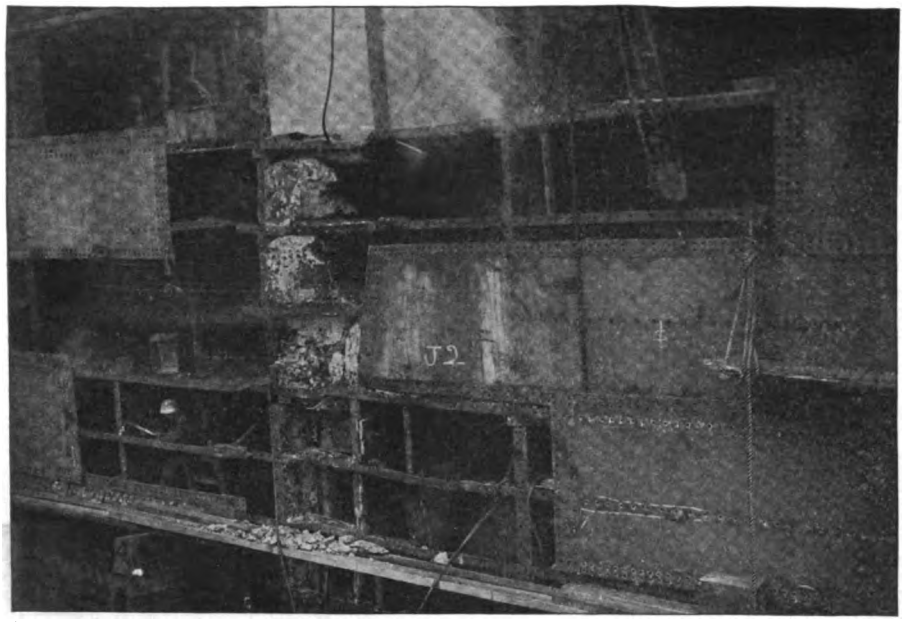


WHEN THE SHIP SAGGED IT CAUSED MANY OF HER FRAMES TO BUCKLE

sediment in fuel oil tends to clog the burners, reducing their capacity and necessitating frequent cleaning. This strainer is also suitable for straining the water supply from such sources as rivers and lakes to prevent woods, sticks, marine plants and small fish from entering the pipe lines.

The strainer consists of a cast iron body containing two perforated steel or brass baskets. The valve arrangement permits the complete removal and cleaning of either basket while the other remains in service. In operation, the oil or other liquid enters the inlet connection of the strainer and passes into whichever basket is in service. The solid matter remains in the basket, the clean liquid passing through the perforations and thence out of the strainer. All cast iron sections are cylindrical, resulting in maximum strength. The valve mechanism is said to be simple and the valves are easily reground.

Electric Drive for New Battleship

The main electric propulsion machinery of the U. S. S. TENNESSEE, which is being supplied by the Westinghouse Electric & Mfg. Co., will consist of four 8375-horsepower motors, each directly connected to a propeller, and two 20,000-horsepower turbogenerators.

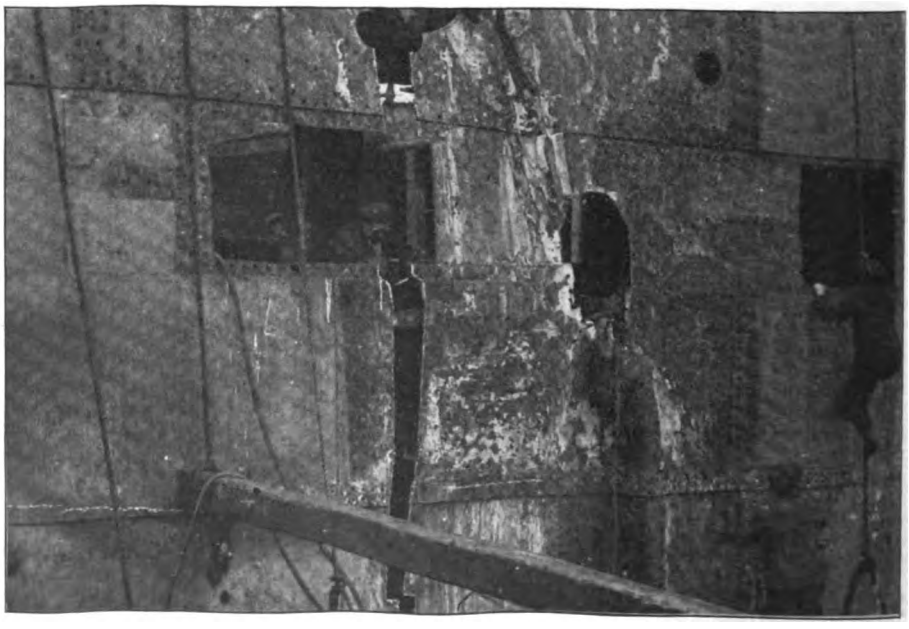
Speed control is obtained by varying the speed of the turbines and by use of two windings, one for low speed and the other for high speed, on each motor. For ship speeds of from 9 to 15 knots, the motors are operated on their low-speed windings and one turbogenerator is used. For speeds of from 15 to 17 knots, the motors are operated on their high-speed windings by means of one turbogenerator and for speeds of from 17 to 21 knots, the motors are operated on their high-speed windings and both turbogenerators are used.

The steam consumption of the turbogenerators ranges from 16 pounds of steam per shaft-horsepower hour for 9 knots to 11.7 pounds for 19½ knots, and 11.9 pounds for 21 knots.

Repair Victim of Halifax Explosion

REPAIRS on the steamer, CURACA, completed by the Robin's Dry Dock & Repair Co., New York, represent a unique experiment in marine construction. The CURACA was one of the English boats of the Grace line. She fell a victim of the Halifax disaster in December, 1917, when the munitions steamer, MONT BLANC, loaded with TNT exploded and caused extensive damage to the boats in the harbor and to the city itself. The CURACA was bound for Belgium with a relief cargo of wheat and horses. She lay alongside a wharf directly abreast of the munitions steamer, being not more than 100 feet distant when the explosion occurred.

The CURACA was almost completely submerged. Her superstructure was blown away and she was buckled at about midlength to such an extent that when refloated the draft at the buckle was 16 feet 2 inches, while the draft at bow was 7 feet and at stern 9 feet 8 inches, showing that the vessel was forced up 9 feet 2 inches from the base line at bow while the stern was forced up 6 feet 6 inches. The captain was successful in pulling her further up toward the beach before she sank completely. This simplified salvage work. In this condition the vessel was raised, temporarily repaired and brought to New York under her own steam. The buckling had been caused by the prow resting on the beach and the stern upon a sandbar. The work of straightening and repairing commenced on April 25, 1919. The big problem presented was to restore the vessel to an even keel. On



CUTTING THE SIDE OF THE VESSEL AT THE POINT WHERE SHE WAS BUCKLED

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a preliminary survey this seemed impossible. Subsequently it was determined to try a plan which appeared to present adequate protection, despite the fact that it was impossible to determine exactly where the buckle was located.

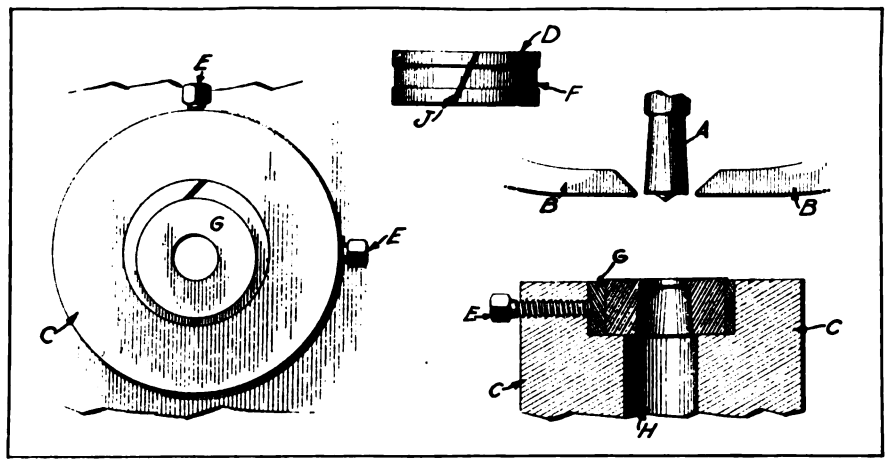
The CURACA was placed in a graving dock. Keel blocks were set solid for a length of 36 feet, inasmuch as the location of the buckle had not been determined. The vessel was warped in, placed over the blocks and plumbed up. Shores from each side of the dock were then put in place against the sides of the vessel. Wire hawsers were extended from each side of the deck and made fast ashore, so that there would be no danger of either the forward or after section listing if a break should result at the buckle point before the straightening of the vessel was completed.

The dock pumps were then started. As soon as the buckled area of the keel touched the blocks the pumps were stopped and examination made to see that the vessel was perfectly upright and over the blocks. The sides of the vessel were then gradually cut at the buckle from the deck to the water line on both sides. The pumps were again started and as the dock was slowly freed from water the cutting was continued about 6 inches at a time.

Close observation showed that as the cutting of the plates and the pumping away of the water progressed the ends of the CURACA dropped gradually, being without the support of the blocks. During this operation frequent inspections were made to determine that both the forward and after sections were upright, that the hull had not twisted and that no structural change had resulted. When the dock had been pumped dry the entire keel of the CURACA rested on the blocks.

It was then discovered that the bottom plating around the buckle had fractured, due, probably, to the vessel having worked at this point. The bottom of the CURACA also was damaged in the explosion to such an extent that 54 of her bottom plates needed repairing and renewing.

The accompanying illustrations show the cutting of the sides of the vessel at the buckle as the water was being pumped out of the graving dock, the manner of handling the vessel in the dock, the pinch to the framing at the point of buckle after some of the midship strakes had been removed.



DIE FOR PLATE PUNCHING MACHINES THAT PERMITS OF READY ADJUSTMENT FOR ALIGNING

Adjustable Die Holder

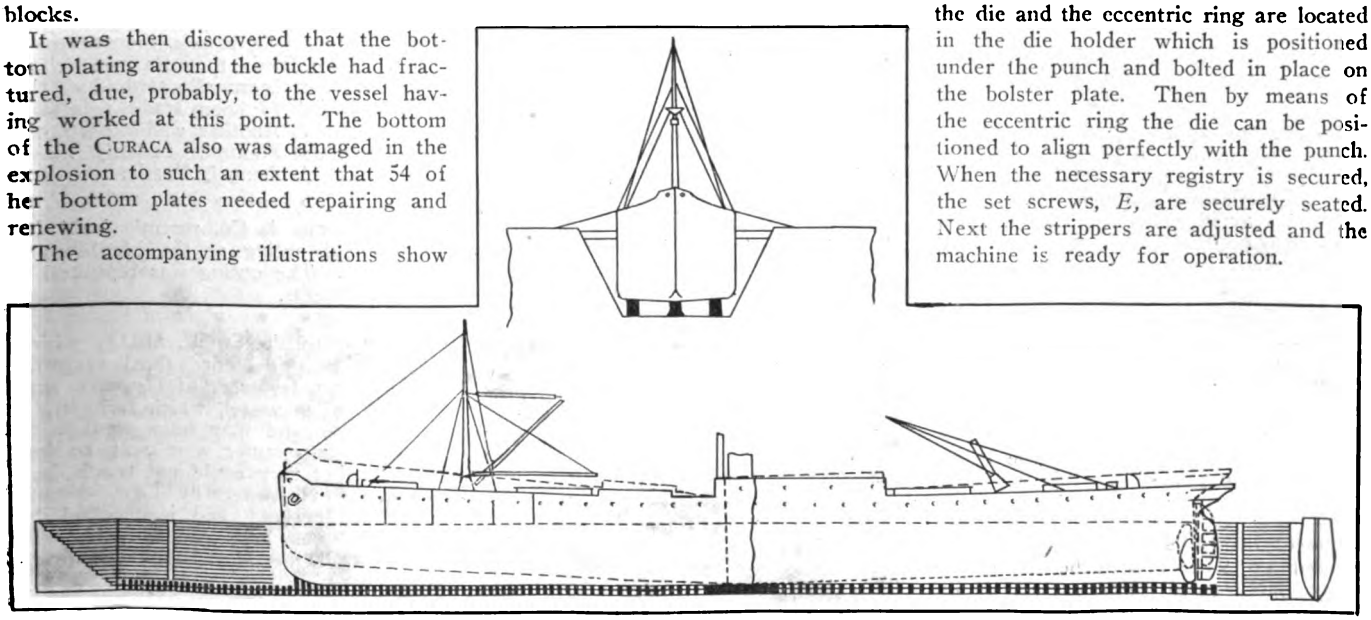
In punching holes for rivets in ship plates, the punch and die of the punching machine must align correctly to produce satisfactory work. Since all punching machines are not equipped with the necessary fine adjustment to keep the punch and die in correct alignment, Philander E. Lane, Atlantic City, N. J., devised the adjustble die holder shown in the accompanying illustration. This device is covered by patent.

In the illustration, the upper view is an eccentric ring used in getting the necessary alignment between the punch and die, at the right is a section of the die, adjusting ring and the die holder while the view at the left is a plan of the die, die holder and adjusting ring.

The punch is shown at *A* while *B* are the stripper plates that strip the plate from the punch after the hole is made. The die holder is shown at *C*. This member is bored out to accommodate an adjusting ring, *D*, and is provided with a seat against which the die, *G*, is forced and an opening, *H*, through which the punchings fall.

The eccentric ring is shown at *D*. This member is provided with a groove, *F*, in which the locking screws, *E*, seat and is split at *J* to allow it to contract and grip the die. The object of the groove is to prevent the screws throwing up burrs that would prevent the ready removal of the ring from the die holder. This member may be protected from undue wear by hardening. The holder is provided with a slot, *J*, to allow it to close.

In setting up the punch and die, the punch is first located in the ram of the press and securely fastened. Next, the die and the eccentric ring are located in the die holder which is positioned under the punch and bolted in place on the bolster plate. Then by means of the eccentric ring the die can be positioned to align perfectly with the punch. When the necessary registry is secured, the set screws, *E*, are securely seated. Next the strippers are adjusted and the machine is ready for operation.



HOW THE VESSEL WAS PLACED IN DRYDOCK. DOTTED LINE SHOWS EFFECT OF THE EXPLOSION WHILE FULL LINE SHOWS HOW SHE SETTLED ON THE KEEL BLOCKS

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Activities in the Marine Field

Latest News From Ships and Shipyards

Ore Movement Shows Decided Gain

THE ore movement has shown a sharp increase during the last few weeks and at the present time is coming down the lakes at the rate of approximately 9,000,000 tons a month. Figures recently compiled show that the movement for July was over 1,000,000 tons ahead of that of June. If coal were going forward at top speed, the freight market would be in better condition and there would be business for all ships. Coal shipments, however, are lagging and owing to the shortage of cars at the mines, some of the shippers do not look for any noticeable improvement during the remainder of the season. This means that many boats will be compelled to go up the lakes light. Not all the ore carriers are getting full cargoes but no boats are coming down light. While furnacemen are placing some orders for ore, the buying movement is not as active as it has been in times past.

* * * *

The steamer ISHPEMING, which struck an obstruction in Ashtabula harbor recently, has been docked in Cleveland for repairs.

* * * *

After hitting a pier at Port Wellen, near Port Dalhousie, the steamer MURIEL W. settled and her after end is now on bottom. The underwriters have asked for bids for floating the craft.

* * *

The steamer W. F. WHITE has been towed to Detroit for repairs to damages sustained when she recently hit the dock at Calcite. She was loaded at the time and sustained damage to her rudder and also lost her shoe.

* * * *

The waters adjacent to Detour and White Fish point are covered with a heavy pall of smoke, the result of forest fires. Vessels are compelled to move slowly to avoid collision. The smoke is the heaviest that has been experienced at that place for many years.

* * * *

James Green died recently at his home in Buffalo. For many years he was chief engineer of the steamer LEWISTON, formerly the SUSAN E. PECK, which vessel was owned by his father, the late Capt. John Green.

* * * *

When the steamer W. A. MCGONAGLE recently unloaded at the Duluth & Northern Coal Dock, Duluth, fast time was made. The vessel belongs to the Pittsburgh Steamship Co. and carried a cargo of 14,270 tons of coal which was gotten above her hatches in 12 hours and 25 minutes. This, however, is not a record for coal unloading as the L. C. HANNA of the Hanna fleet unloaded 10,073 tons of coal in 7 hours and 55 minutes in 1915 at the Berwind Fuel Co.'s dock, West Duluth.

* * * *

The lumber movement is light this season and many of the barges that are operated in this trade are not in commission.

* * * *

Capt. John Nahrstedt, who commands the steamer A. C. DINKEY, was hit by a car on the coal dock at Toledo recently, receiving slight injuries.

* * * *

Capt. John G. Crawford died recently of a hemorrhage at the Paulina Stearns hospital at Ludington. He was master of the Pere Marquette car ferry No. 18. He leaves a widow and one son.

* * * *

The steamer C. F. BIELMAN, which recently ran aground at the Soo was later released without having to lighter her cargo.

* * * *

The steamer W. H. PHELAN went ashore recently a mile below Cardinal. Assistance was given by the Donnely Wrecking Co., Kingston.

* * * *

The steamer A. MCVITTIE and the barge QUEBEC reecntly collided in the Welland canal. The barge sustained severe damage.

* * * *

The boom holding a raft of logs belonging to the Cleveland-Sarnia Saw Mills Co., Sarnia, broke recently and a large raft floated down the St. Clair river. This caused the steamer OWANA of the White Star Co. to be held up for two hours at Sarnia on her return trip from Detroit. Tugs were put to work on the logs and succeeded in tying them up.

* * * *

Round island gas buoy, which recently was reported as out of position and not burning has been placed in correct position and relighted.

* * * *

A gas buoy has been placed in 42 feet of water to make the location of the sunken barge DUNDURN about one-half mile northeast of the entrance of Ashtabula harbor. The buoy is conical in shape with red and black stripes and has a skeleton superstructure. It shows a occulting red light every 20 seconds, light 10 seconds, eclipse 10 seconds and is 10 feet above the water line. It is visible for seven miles. The fixed red lantern light which previously marked the wreck has been discontinued. The wreck has about 19 feet of water over it. The cargo comprising some 700 tons will be salvaged, but no decision has been made regarding the raising of the vessel.

* * * *

The steamer J. K. DIMMICK recently ran aground in Toledo harbor while loaded with ore. The tug A. G. HARDING and the lighter RESCUE went to the assistance of the stranded craft which was compelled to lighter part of her cargo. The vessel was not damaged.

* * * *

The steamer LAKE FARMINGTON, built at Duluth for the Emergency Fleet corporation, recently arrived in Cleveland. The craft is equipped for oil burning and is the first of this type to leave the head of the lakes.

* * * *

The steamer GEORGE STEPHENSON, which was in drydock at South Chicago for repairs on her bottom and stern bearing, is now in commission.

* * * *

The steamer HENRY STEINBRENNER, which struck in the Soo, made temporary repairs at Superior, after which she proceeded to Toledo for further repairs.

* * * *

The passenger steamer THEODORE ROOSEVELT, which recently was placed on the Cleveland-Port Stanley run, is in command of Capt. Donald MacLean, who has been master of the craft for the past 10 years. Her chief engineer is Harry D. Erwin, who also has served on the craft for many years.

* * * *

Two former lake vessels, the steamers E. C. POPE and the RANDOLPH S. WARNER, have been allocated by the shipping board to open trade relations with Germany. Another well-known old lake vessel, the MARISKA, recently made a voyage to Archangel, Russia.

* * * *

M. C. Hanna & Co. recently held its third annual outing at the Maplewood Shore club. The outing was reported a complete success.

* * * *

The crew of the D. W. MILLS, which went ashore inside Ford shoal recently about three miles west of Oswego, was taken off. The vessel, which is light, is in bad shape and may be a total loss. A tug and a steamer were sent to her assistance but they could not reach her. The MILLS is owned by Capt. Frank Peterson, Cleveland, and is covered by insurance. She has been operating in the coal trade between Lake Erie ports and Montreal.

* * * *

The steamer J. F. MORROW recently went ashore at Morgan's point, about six miles from Port Colborne. She was

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released after lightering part of her cargo and sustained no damage.

* * * *

The steamer D. G. KERR recently broke all previous records for ore loading at Duluth when she recently took on 12,689 tons of ore in 35 minutes. The KERR is owned by the Pittsburgh Steamship Co.

* * * *

Capt. Charles A. Benham, master of the steamer JOHN STANTON of the Hutchinson fleet, died at his Cleveland residence recently. He had been in poor health for some time but did not leave his command until a week before he died. He was 51 years old and had spent practically all his life on the lakes. He had been in the employ of the Hutchinson line since 1904 and previously to that time he commanded vessels for the Wilson Transit Co. He is survived by his father, wife, two sons and four brothers. Funeral services were in charge of Forest City Commandery, Knights Templars. He was buried at Riverside cemetery, Cleveland.

* * * *

The steamer JAMES WATT, which just finished repairs at Chicago, again came to grief. She was badly damaged in coming down the Chicago river when she was hit by the Halstead bridge which closed on her suddenly. Her houses were demolished, steering gear, whistle pulls and electrical equipment wrecked. All the wood and iron work at the top and bottom of the pilot house was ruined beyond repair. No one was injured. It will cost approximately $12,000 to recondition her.

* * * *

The Cleveland Engineering Construction Co., Cleveland, recently purchased the barge D. G. CUTLER from the Kelley Island Lime & Transport Co. The barge was in Sandusky at the time it was bought and has been brought to Cleveland, where it will be converted into a derrick for breakwater work.

* * *

The steamer LAKEPORT is in drydock at the Foundation Co.'s yard at Port Huron, where she will be cut in two and shortened for the Welland canal trade.

Late News From Atlantic Seaboard

RECENTLY the schooner AMERICA, a Cape de Verde packet, reached Boston instead of New Bedford owing to a faulty chronometer and the 20 passengers were landed at that port. A singular coincidence is that James Reid, a Boston bay pilot, brought the schooner in, the pilot's father having built the vessel which he named for the cup schooner of yachting fame. And the elder Reid for a number of years was sailing master of the original AMERICA when that yacht was property of Governor Butler, of Massachusetts.

* * *

A 3-mast schooner, the JAMES E. COBURN, has been launched by the Penobscot Shipbuilding Co., South Orrington, Me., for Rogers & Webb of Boston. Capt. J. F. Chase is master.

* * *

The new 4-mast schooner BRADFORD E. JONES, Capt. W. E. Reamie, sailed from Boston for Buenos Aires with a cargo of 1,300,000 feet of lumber and a return charter is being negotiated at an advantageous rate.

* * *

The JAMES NEWSOM, a new 4-mast schooner for Crowell & Thurlow, Boston, has been launched at East Boothbay, Me., and will load lumber for Buenos Aires.

* * *

Rebuilt at an expense of $15,000 the tug B. G. PURDY, owned by the Purdy Towing Co., Boston, has been returned to service. A steam engine now replaces the producer gas propelling plant.

* * *

The coast guard tug MACKINAC, Captain Downes, has been assigned to Boston as customs boarding boat following 18 months service at New York.

* * *

A strike of fishermen with headquarters at Boston has thrown a fleet of several hundred vessels out of commission. Practically all the Gloucester boats were laid up at large cost to owners while hundreds of fishermen have sought other employment. The strike followed a demand for a fixed minimum price on fish and the demand was declared to be illegal by the attorney general. The fishermen then presented a new schedule which demanded that the vessel owners agree with wholesalers on a minimum price on the several varieties of fish and, in addition, guarantee the fishermen a larger percentage on the catch.

* * *

Two steamships, the PRINCE GEORGE and the PRINCE ARTHUR, for a long time in service between Boston and Yarmouth, N. S., have been turned back to the Eastern Steamship Lines, Inc., following a period of service as hospital ships in English waters. The vessels have been laid up for the present for a thorough overhauling.

Canal Traffic Drops

DURING the fiscal year ended June 30 commercial ships passing through the Panama canal numbered 2031 aggregating 6,013,000 net tons. The vessels carried 6,800,000 tons of cargo. The ships were 4 per cent and their cargoes 10 per cent less than during the preceding fiscal year. Of the vessels passing through the canal American vessels led with 791, British 601, Norwegian 128, French 104, Chilean 93 and Japanese 90. Tolls were approximately $6,180,000.

* * *

The British steamer ANGLO MEXICAN, Captain Davies, docked at Boston recently having sailed from Glasgow, Scotland, with 750 tons of block chalk and 300 tons of general merchandise. She was 13 days in making the passage across the Atlantic.

* * *

Julius T. Mayer, Philadelphia, director in America of the Hamburg-American line, sailed for Germany recently to ascertain the present status of the once great German steamship company. He said he had been out of touch with the main offices of the concern since the outbreak of the war. He also stated that a Zeppelin service between Germany and this country was not an impossibility.

* * *

Recent cable advices announce the safe arrival at Rotterdam, Holland, of the 6-mast schooner WYOMING from Pensacola, Fla., after a passage of two months. The vessel was in command of Capt. Caleb R. Kelley, who is one of Boston's port wardens.

* * *

The Dutch steamer NOORDWIJK recently loaded 21,000 bushels of rye at East Boston, Mass., after which she proceeded to New York to complete her cargo.

* * *

Dock Commissioner Murray Hulbert, New York, does not intend to allow the establishment of docks at Fort Pond Bay, L. I., to accommodate the 1000-foot steamers to be built by the shipping board, without giving New York a chance to compete, according to a recent announcement.

* * *

New York has a total of 197 shipping board ships, Boston, 11; New Orleans, six; Wilmington, N. C., nine; Charleston, S. C., nine; Savannah, Ga., nine; Jacksonville, Fla., nine; Baltimore, six; Philadelphia, 11; Norfolk, Va., two, and Galveston, Tex., one, according to a recent compilation.

* * *

The United States destroyer HUMPHREYS was recently launched at the Camden, N. J., yard of the New York Shipbuilding Corp. The vessel was sponsored by Miss Letitia A. Humphreys, a great-granddaughter of Joshua Humphreys, the first naval constructor for the United States navy for whom the vessel was named.

* * *

Some anxiety is felt for the safety of the 4-mast schooner BLUE PETER, now out over 120 days on a passage from New York to Durban, South Africa. The voyage should have been completed in 90 days. She carried a

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large general cargo, a crew of 10 men and left New York on March 24.

* * *

Suits have been brought in the United States courts by the government against the steamship WILLIAM P. PALMER to recover fines for violation of navigation laws in operating the ship in Buzzard's bay without being properly licensed.

* * *

Fire broke out recently on the British steamer MARAVAL while loading at Brooklyn, N. Y. The fire was extinguished by pumping the vessel full of water, after which she capsized at the dock.

* * *

The back range light at St. Peter harbor on the north coast of Prince Edward island has been changed. Its new position is 1450 feet 154 degrees (S. 2 degrees mag.) from the front light. The change was recently made owing to the shifting of the channel.

* * *

The steamship BROOKLAND, from Tacoma, Wash., and Seattle, for New York with machinery deranged; the British auxiliary schooner CAPE FINISTERRE, from Port Blakely to Queenstown, with the same trouble, and the auxiliary schooner SOSTIND, bound from Puget sound for Portsmouth, N. H., with machinery trouble, all put into Panama in distress recently.

* * *

Two buoys recently were placed near Chimney corner on the west coast of Cape Breton island. One is at the southwest of rock near the entrance to Chimney corner in Lat. N. 46 degrees 23 minutes 47 seconds, Long. W. 61 degrees 10 minutes. This buoy is a wooden spar, black, and is moored in 20 feet of water. The other buoy is located off the extremity of Chimney corner point about 600 feet south of the black spar buoy. It is a wooden spar, red, and is moored in 19 feet of water.

* * *

A green spar buoy has been placed to mark the wreck of the schooner ENTERPRISE which sunk on May 14, 1919, about two miles south of Entry island, Magdalen islands, Gulf of St. Lawrence. The buoy will be discontinued as soon as the wreck is removed.

* * *

The tug COVINGTON, bound from Boston to Norfolk, Va, returned to Boston recently in tow of the tug BOXER, with her tail shaft broken. She left the barges she had in tow at anchor off Cape Cod. The BOXER afterward picked up the barges and towed them to their destination.

* * *

F. S. Bowker & Son, Phippsburg, Me., recently launched the 4-mast schooner MARY STUART. The craft is owned by David Cohen & Co., New York, and registers 726 gross tons. She loaded superphosphates at New York for Belfast, Ireland.

* * *

The Cheasapeake Steamship Co., operators of the Bay line between Baltimore, Norfolk and Richmond, under the terms of its contract with the government will receive as compensation for the use of its property $102,048. This company is under the control of the Southern railroad.

Activities Along the Gulf Coast

REGULAR passenger and freight service between Chicago and New Orleans by steamer will be inaugurated Sept. 20 by the Great Lakes & Gulf Transportation Co., according to announcement by W. A. Bertram, general manager of that corporation. Two steel steamers, each 300 feet long and of 2500 tons capacity, will be put into service, Mr. Bertram says.

* * *

Gulfport, Miss., shipping is showing considerable increase since the end of the war. An average of six steamers are calling and loading with lumber for European ports every week. The Texas Oil Co. has taken a lease on a large pier at Gulfport and is erecting tanks and loading pipes to supply oil-burning ships with fuel.

* * *

The Houston, Tex., ship channel is attracting large industries to that city, 22 having located along the channel since it was constructed. The federal government has offered to give $1,000,000 to increase the depth of the channel from 25 to 30 feet all the way to the Gulf, provided Houston will devote a similar sum to the project. A bond issue for this purpose is to be voted on soon. Houston already has spent about $4,000,000 in harbor and channel improvements.

* * *

The Cuyamel Fruit Co., New Orleans, has ordered two steel oil-burning freight and passenger steamers to be built by the Newburgh Shipyards Co., for delivery next May. Their capacity will be 2500 tons each and they will be added to the fleet of four steamers now operated by this company between New Orleans and ports of Honduras, giving sailings to Puerto Cortez four times a week, with daily service planned for the near future. Maintained speed, according to the contract, must be 15 knots; this is faster than any of the steamers now operated out of New Orleans. Each ship will be equipped to carry passengers. Contract price was not given out.

* * *

The ELIZABETH RUTH, a 2500-ton auxiliary schooner, built by the Biloxi Shipbuilding Co., Biloxi, Miss., has returned to Mobile, Ala., after a series of disasters which kept her at sea 11 months, vainly attempting to reach her destination at Sydney, Australia. She carried a cargo of caustic soda, which she was compelled to discharge at Balboa, after five accidents in her engine room compelled her to abandon her voyage.

* * *

The ANIWA, a 10,000-ton steamship, largest vessel of her class belonging to the Emergency Fleet corporation, which was allocated late in June to Mobile, Ala., has cleared for Liverpool, loaded with 14,000 bales of cotton, and a large consignment of resin and lumber. She was assigned to Page & Jones, Mobile shipping agents.

* * *

The Fred T. Ley Shipbuilding Co., Mobile, Ala., launched the 7500-ton concrete steamer SELMA, said to be the largest ship of this kind in the world. More than 10,000 persons saw the launching. The SELMA was built for the United States shipping board.

* * *

The Gulf Shipbuilding Co., which operates a plant for the construction of wooden ships at Madisonville, across Lake Pontchartrain from New Orleans, has been declared bankrupt by Judge Rufus Foster in United States district court at New Orleans, and the case has been referred to William A. Bell, referee in bankruptcy, for the usual investigation. Total indebtedness alleged aggregates $22,000. It is charged that money in bank belonging to this company was illegally transferred by its officials.

* * *

The Mississippi Shipping Co., the $1,000,000 corporation recently organized by St. Louis and New Orleans capital, has sent out its first ship with general cargo to ports on the East coast of South America. The ship is the BOUND BROOK, oil-burning freighter of 5100 tons, completed lated in June by the Submarine Boat Corp., Newark, N. J., and allocated to the Mississippi Shipping Co. by the United States shipping board. This ship is to be followed shortly by two others, to be put into the same service. N. O. Pedrick is general manager of the company, with headquarters in New Orleans.

* * *

Special committee of the association of commerce, New Orleans, with Col. William C. Dufour, chairman, is making a detailed study of methods and means of loading and unloading ships at New Orleans, with a view to improving these facilities. Investigation was undertaken on complaint of coffee importers that greater speed and efficiency should be maintained in the handling of coffee cargoes.

* * *

The GLENAPP, a 11,000-ton, British-owned motorship, the largest vessel of this kind ever built, is in successful operation between New Orleans, Liverpool and other British ports, handling cotton and pig iron from this side, and returning in ballast. She maintains 14 knots and her engine-room force con-

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sists of 19 men, as against about 65 for a steamship of the same size.

* * *

An unusual cause of fire was found in the clashing together of steel hoops binding cotton bales being loaded into the 6000-ton steamer NICILO II, at New Orleans recently, when the fire tug SAMPSON and the city fire department saved the ship from destruction by pumping steam into the hold.

* * *

The various packet companies operating on the Mississippi, Red and other rivers of the South are adding new equipment and rebuilding several small steamers to handle the coming rice crop, which will be one of the largest ever harvested. The JOHN D. GRACE, a large steamer operated by the Bradford Transportation Co., is being overhauled and repaired, and has been temporarily replaced in river service by the steamer DIXIE. This same company is negotiating for three more packets, to be put into service in the rice belt. The freight and passenger steamer AMERICA, operating between New Orleans and Carriola, Ark., opened her season early in August. She is the largest of the old-time steamers, and belongs to Capt. V. L. Cooley.

* * *

Some of the 500,000 tons of steel shipping, for which France is seeking to place contracts with American shipyards, probably will be constructed in the South, according to Commander G. Toublet, naval architect of the French government, who visited a number of southern shipyards in July. The new ships are to be of 3500 to 5000 tons, according to Commander Toublet, who said that France plans to increase its merchant marine to 3,000,000 tons, all of which will be built in France with the exception of the 500,000 tons to be awarded to American shipyards. France is also purchasing 200,000 tons of seized German ships. J. Flamanc, engineer, and Y. Cozian, technical agent, both officers of the French navy, accompanied the commander on his tour.

Up and Down the Pacific Coast

FISH piracy in Alaskan waters is assuming serious proportions and the government is taking steps to suppress it, according to a recent statement of John N. Hallowell, assistant to the secretary of the interior, who handles Alaskan affairs. The department of the interior after several conferences with the navy has succeeded in having the cruiser MARBLEHEAD ordered from San Francisco to Juneau. Two submarine chasers have been assigned to the same duty and the bureau of fisheries and the bureau of forestry have been instructed to arm all their men on the Pacific coast and to place both men and launches at the disposal of the governor of Alaska. The coast and Geodic survey crews on the Pacific coast have been ordered to suspend mapping operations and to devote all their energy to the suppression of fish piracy.

* * *

The 400-ton wooden steamer BLAKELY which recently went ashore on Waddah island, Neah bay, recently came into Seattle under her own steam and docked at the Hanford street terminal of the port commission. The vessel leaked badly but her pumps kept her clear. She discharged her cargo of ties and went into drydock for repairs. She was outward bound for Great Britain when she struck. Her cargo consisted of 1,566,840 feet of railroad ties, said to be one of the largest cargoes of this material ever loaded in a shipping board vessel.

* * *

The Skinner & Eddy Corp., Seattle, recently launched two 9600-ton steel steamships within a space of half an hour.

* * *

The schooner THERESA, a derelict, recently was sunk nine miles off Pillar point on the California coast by gunfire from the United States destroyer CHAUNCEY. The THERESA was abandoned by her crew off Fort Baggs after she became unseaworthy.

* * *

The steamer ADMIRAL WAINWRIGHT of the Pacific Steamship Co., recently sailed from Seattle with a cargo of 1,200,000 feet of lumber for Cuba. She will go direct to her destination via the Panama canal. The lumber carried by the vessel belongs to the spruce production division of the United States army and was left in Coos bay after the war organization suspended operations.

* * *

The 3500-ton steamer BOXBUTTE, a shipping board vessel, recently was assigned to the Pacific Steamship Co. The vessel will join the fleet of ships now engaged in transporting railroad ties to England.

* * *

The Ames Shipbuilding & Drydock Co., Seattle, recently launched the 8800-ton steamship WEST ISON.

* * *

The OSAQUMSICK a 9400-ton vessel built by the North-Pacific Shipbuilding Co., Seattle, recently passed her trials successfully and is now loading for maiden voyage. During her trials she logged 11 knots, notwithstanding the fact that her propeller was partly out of water.

* * *

The steamers FRANK H. BUCK and the BRADFORD recently limped into San Francisco after a collision at sea. Both vessels were badly damaged. The BUCK left San Francisco bound for San Pedro in ballast while the BRADFORD was bound for Vancouver from Talara bay with a cargo of oil for the Standard Oil Co.

* * *

With the first vessel expected in Seattle in September, the recently organized Rolph Mail Steamship Co., San Francisco, will include Puget sound in its service to and from the west coast of Central and South America, it was recently learned when the company appointed the Seattle branch of Hind-Rolph & Co. as its general agents in the state of Washington. The organization of the new corporation is one of the results of peace. The company is said to be financed on a large scale and ultimately will operate a big fleet of ships.

* * *

The Nippon Yusen Kaisa liner FUSHIMI MARU recently docked at Seattle with a cargo of silk. The big liner left Yokohama with every foot of cargo and passenger space occupied.

Plans Unique Ship

A NEW type of vessel is being planned at Prince Rupert, B. C., which is to be constructed solidly of 2,000,000 feet of lumber. It will sail for Europe via the Panama canal under its own power. By reducing transportation costs and automatically solving the tonnage problem, this strange vessel is expected to accelerate the overseas lumber trade thereby increasing British Columbia's lumber exports. The method of constructing the vessel will be simple. Blocks will be laid for the keel and fore-and-aft and cross timbers will then be placed in position. When sufficient timber has thus been put together, in regular shipbuilding style, to insure buoyancy, the embryonic vessel will be launched. The planks will be so adjusted as to form rounded bows and stern for a ship of solid lumber which will ride low in the water. The vessel will be fitted with five masts with fore-and-aft sails and auxiliary engines. When the ship arrives at port the fastenings which hold the lumber in place will be released, leaving the lumber, now loose planks again, ready for immediate distribution. The unloading of the craft, of course, will mean its demolition. When the lumber is taken away there will be no ship left. The engines will be taken out and sent back to British Columbia to be used in another vessel of the same kind.

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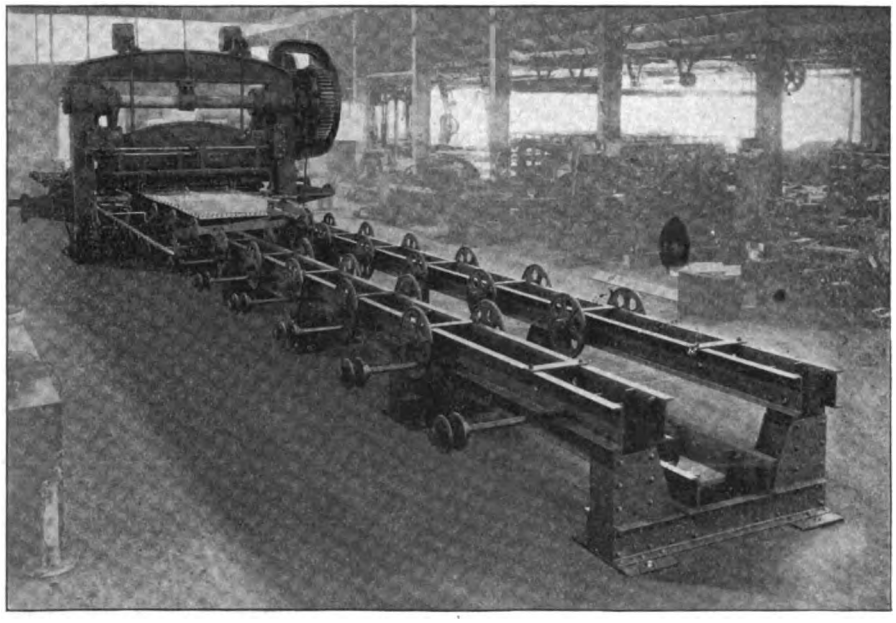
Equipment Used Afloat, Ashore

Ship Plate Punch—Plier Wrenches—Hollow Packing—Steam Windlass—Vertical Miller—Reaming Machine—Compact Lighting Plant

PUNCHING of irregularly spaced holes in ship plates, which work cannot be done on a regular multiple punch, is often an expensive operation. To provide an economical means for handling this work, the Thomas Spacing Machine Co., Fittsburgh, recently designed and built the tool shown in the accompanying illustration. This machine was installed at the Great Lakes Engineering Works, Detroit.



PUNCH DESIGNED FOR SHIP PLATE WORK ON IRREGULARLY SPACED HOLES

This machine has sliding punches which permits it to punch one or more holes in any predetermined location without shifting the plate sidewise. It is pointed out that this machine eliminates working with a single punch and that it incorporates some of the speed of a multiple punch. It will handle any kind of flat plate and is controlled by one operator in three different ways.

The first method consists of punching plates marked with centers. In this operation, the movement is controlled by two hand levers, the punches being slid across the face of the machine and thus eliminating side shifting.

In the second method, the punching is accomplished by means of a template and indicator. In this case, the plates are not marked beforehand, the spacing lengthwise being derived from a wooden template which travels with the plate. The crosswise spacing also is derived from a template moving with the punches. The movement of the plate is controlled by a hand wheel and that of the punches by a simple ratchet lever.

In the third method, the machine is used as a regular multiple punch with a hand operated spacing table, in cases where the number of plates to be punched will warrant making a steel template and setting up the punches across the face of the machine. The sliding punches are shifted aside and standard punching units, which are capable of being set down to within two inches center distance, are used. Regular movable punches can also be used for the crosswise punching and a steel template for lengthwise operations.

The steel template is made of ¼ to ⅜ x 2-inch bar stock with notches for the desired spacing. The wood template works in connection with an indicator. It is made of ordinary template stock from ⅝ to ¾ inches thick, about 2 inches wide. The steel template with the notches provides a fixed stop in connection with a pawl mounted near the punch. This pawl is stationary, the template traveling with the carriage.

The punches are of the floating type. The point of the punch rests on the plate until the correct register is made. This is done by shifting the plates lengthwise and the punch crosswise. When the mark is reached, an electric contact controlled by a foot lever operates the clutch through the medium of a magnet.

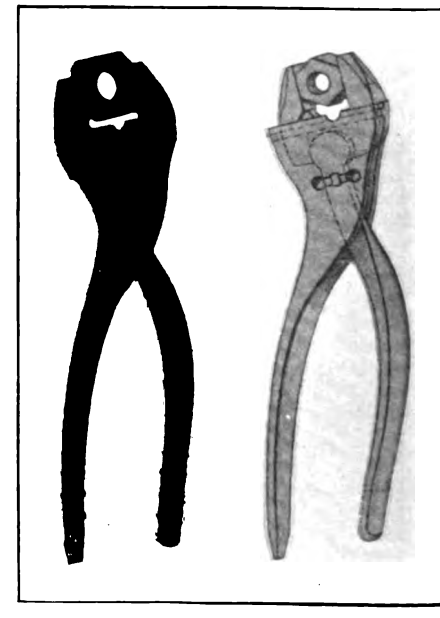
The strippers are arranged in the same manner as on the ordinary multiple punch, except that they do not extend between the punches but are made just long enough to clear the punches at the rear.

The table is similar to that of an ordinary hand-operated spacing table with the exception that the operator remains stationary and is located close to the punch. The movement of the plate is controlled by a traveling carriage to which the plate is fastened by clamps.

The carrying rolls are fitted with ball bearings and are independently mounted on the shafts. The plates are carried through the punch in a straight line by means of side and tail guides. To avoid loss of time in setting the plate in the proper place on the table, centering clamps are provided which enable the operator to position the plate properly. They consist of two independent clamps operating symmetrically on each side of the center of the table by means of right and left hand screws, actuated by hand wheels.

Plier Wrenches

The accompanying illustration shows a parallel-jaw plier wrench recently developed by A. G. Allan, Chicago. Briefly described, the appliance consists of a fixed member that carries one of the jaws while the other member which carries the other jaw is movable. Three slots are provided for shifting the fulcrum which permits the operator always to maintain a positive grip on different sized nuts, pipe, or other members that it is desired to actuate. It is



PLIER WRENCH DESIGNED FOR USE IN CONFINED SITUATIONS

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pointed out that the three fulcrum points permit the operator to adjust the tool to handle a wide range of work.

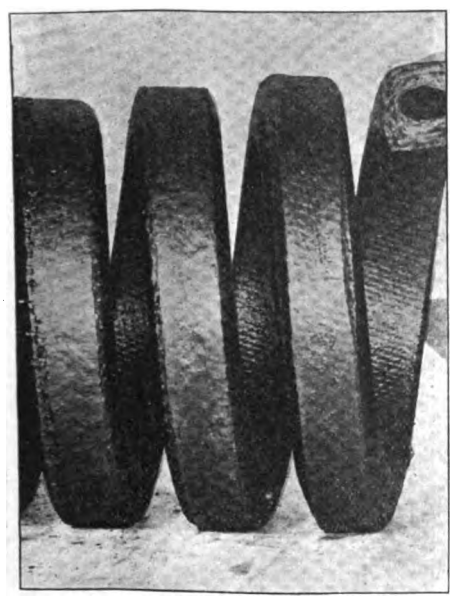
It is said that the operator can always get a ratchet motion on nuts and pipes simply by releasing the hand pressure on the handles and taking a new grip. The leverage obtained is sufficient to enable the operator to maintain a positive grip. The tool is designed particularly for use in confined situations in handling comparatively small nuts and piping aboard ship.

Hollow Packing

Those conversant with marine engine maintenance problems realize that it is often a difficult matter to keep steam from blowing past the packing in cases where rods are worn out of round. To obviate this difficulty, the Hollow Center Packing Co., Cleveland, developed the packing shown in the accompanying illustration.

The hole is oval shaped so that the packing is flexible and when put under strain by tightening the gland, it readily expands to compensate for irregularities. Another feature, it is pointed out, is the fact that the hollow construction gives the packing comparatively long life, due to the fact that as the action of the rod wears the packing away, setting up the gland elongates the packing rings making them fill the gland completely. It is said that the hollow design also eliminates undue friction which is apt to score the rod.

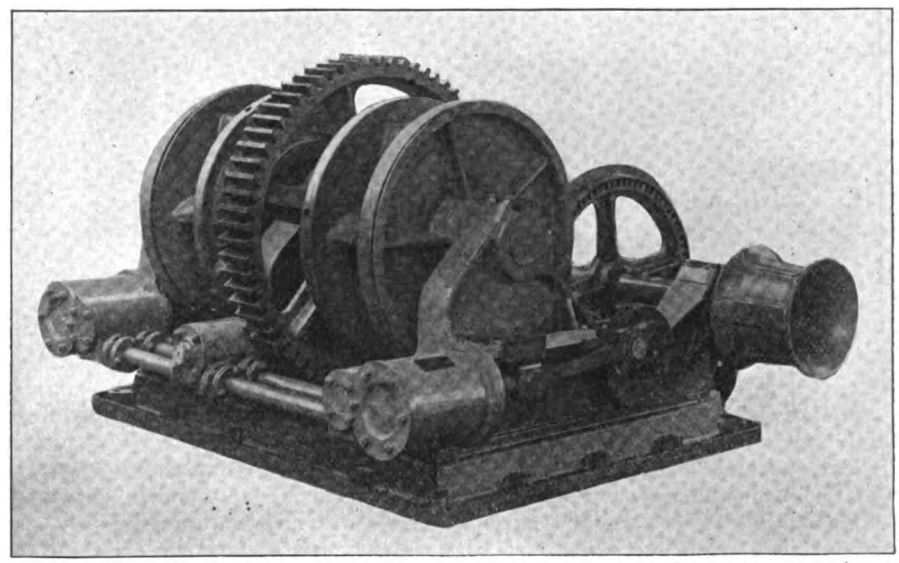
This material is made in two different grades; one for ordinary use, with steam at pressures up to 125 pounds, and another for high pressure and superheated steam. It is pointed out that the latter grade is specially designed to withstand the action of steam at high temperatures.



HOLLOW PACKING FOR MARINE PISTON AND PUMP RODS

Steam Windlass

The windlass shown in the accompanying illustration is a development of the American Clay Machinery Co., Bucyrus, O. It is a self-contained unit mounted on a substantial bed plate and is driven by a double steam engine, one cylinder on each side of the bed, cranked to the drive shaft at 90 degrees. Power to the wildcat shaft is transmitted through an intermediate shaft which member carries the gypsy heads. As the intermediate shaft is located well aft, it is pointed out that the device takes up a minimum amount of deck space as it can be located well forward.



SELF-CONTAINED WINDLASS FOR CARGO VESSELS

The gypsy heads are proportionately large to give maximum power in warping and as the shaft on which they are mounted operates at comparatively high speed rapid handling of lines is assured. The wildcat shaft, it is said, operates at sufficient speed to expedite the handling of cables. The wildcats are forward of the engines and outside of the chain paths so that dripping water or mud, which comes up with the cables, does not come in contact with the working parts of the machine.

All journals are babbited and the wildcats are brass-bushed. Each wildcat is driven by a block-key type locking ring which is operated by a lever, with a cam on the outer surface of the ring. The wildcats can be locked and unlocked with a 60-degree movement of the lever. The first reduction gear is guarded completely. Other gears are guarded at the junction where they mesh with their pinions. Steam to the cylinders is admitted by piston-type valves. The cylinder, front head, steam chests and its front head, of each engine and brackets for locating the cross head guide bars are cast integral with the side housings of the windlass. Cylinder and steam chest covers are fitted with ground joints. The steam chests have removable cast iron liners and both the steam chest and cylinder are bored at one setting to insure correct alignment. Piston rings, steam chest valve, reverse valve, piston rods, valve stems and crank and crosshead pins are finished by grinding to insure accuracy. This also reduces friction. The crosshead is of the locomotive hung type fitted with slippers to take up wear. Cast iron gears are made of a mixture suitable for this purpose. All shafting is forged steel. These windlasses, it is pointed out, are built in large lots and are machined with jigs and special tools which procedure insures duplication of parts. They are made in several sizes to suit American and British specifications. Tests recently conducted, it is said, showed that the windlass developed 25 per cent of power in excess of specifications and that an excess speed of 10 per cent was derived.

Vertical Miller

For the accurate milling of large, irregular pieces the vertical milling machine, shown in the accompanying illustration, is said to be especially adapted. It is a product of the Newton Machine Tool Works, Inc., Philadelphia, and was designed primarily for marine and railroad work. In the design of this tool, it is pointed out that many features have been in-

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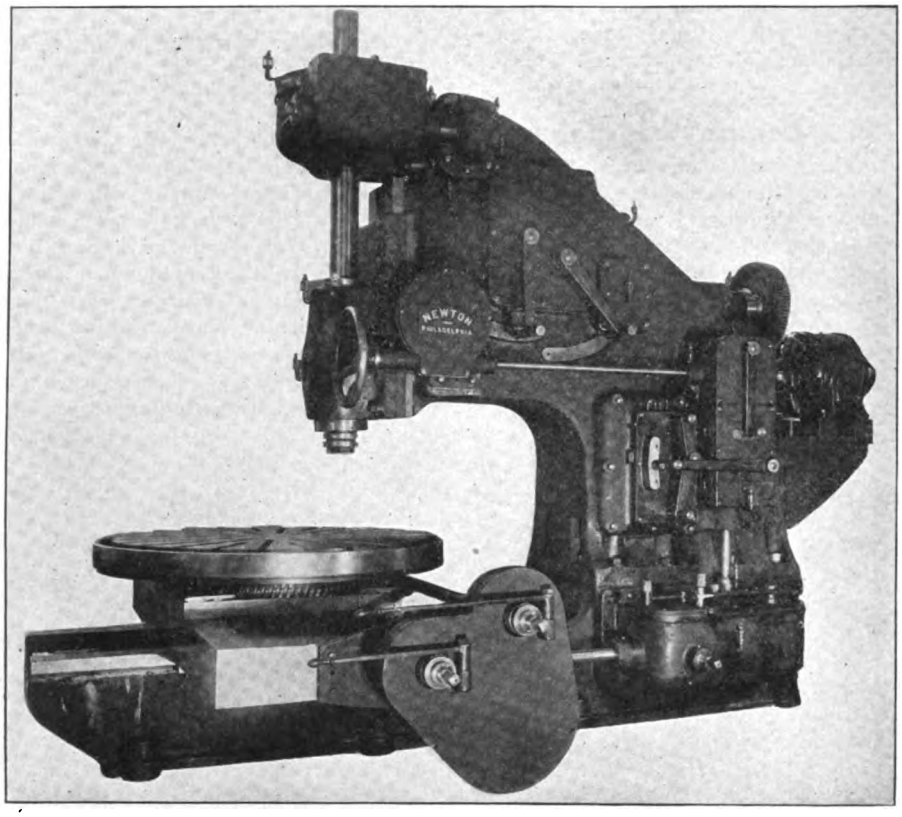


HEAVY DUTY VERTICAL MILLING MACHINE FOR MARINE WORK

corporated that previously were found only on small, precision machines.

The machine is equipped to handle continuous milling operations requiring face milling cutters, the finishing of surfaces requiring cylindrical cutters and for drilling and boring operations. An extensive range of spindle speeds is provided as well as power table feeds for circular longitudinal and transverse directions.

The machine, it is pointed out, is carefully constructed so that all its parts align properly. The spindle revolves in bronze journal boxes in the spindle saddle and is equipped with a retaining drift key which is controlled through the medium of nuts threaded on the spindle nose. The spindle drive is through a worm and worm wheel and a speed box. The changes of speed are obtained without removing any gears. The gears are mounted on sliding sleeves which are controlled by latch levers located on the outside of the speed box.

The spindle saddle is provided with a side adjustment maintained through the medium of a taper shoe and is counterweighted to equalize its weight. It is equipped with a hand vertical adjustment in addition to the reversing feed and has a reversing fast-power traverse.

The platen is circular, of heavy construction, and is surrounded by an oil pan, made integral. The platen has a full bearing on its saddle to which it is held by four corner clamps. The circular movement is controlled by an annular bearing of large diameter and ample depth. The platen has a reversing feed to the circular, in-and-out and cross motions in addition to a fast-power traverse for reversing. It has hand control for all movements and each movement is independently clutched.

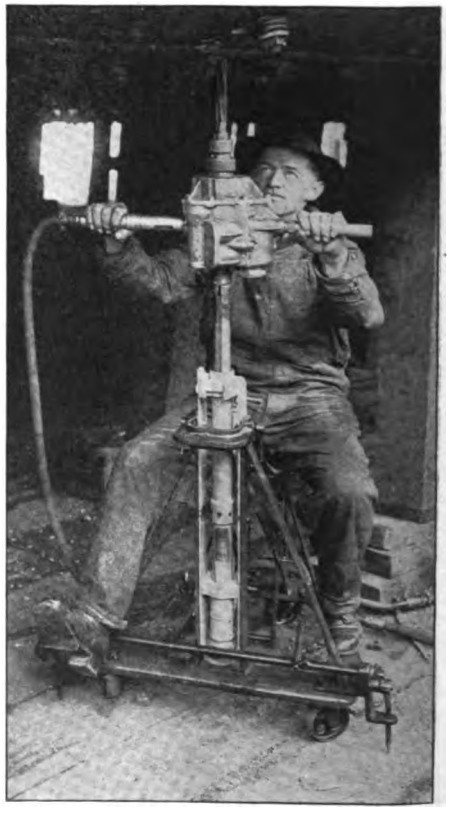
The platen saddle has a narrow guide alignment on the cross slide and is fitted with a taper shoe, while the cross slide has square bearings on the base and is also fitted with a taper shoe. Some of the principal dimensions of this machine are: Diameter of spindle, 6⅜ inches; diameter of platen working surface, 60 inches; cross feed, 65 inches; in-and-out feed, 50 inches; vertical traverse of spindle, 24 inches; distance from the center of spindle to the frame, 50 inches.

Reaming Machine

To ream and countersink the holes in a steel ship's keel and bottom plating is a job that generally requires considerable time, due to the fact that the workman labors under adverse conditions as he is under instead of over his work. To expedite work of this kind, the Bolter Up Machine Co., Vancouver, Wash., recently developed the device shown in the accompanying illustration. In using the device, the workman is provided with a seat which is adjustable to accommodate his stature. In this manner he is guarded against striking his head on the bolts used to hold the plates in place temporarily. The base of the machine is made of flanged steel plate, provided with three castors so that the machine may readily be moved from hole to hole as the work progresses. To prevent the machine from moving in a rotary direction, while it is in use, push rods are provided which take the lift from the castors as soon as the device is located.

A cradle carrying an air cylinder is held by two uprights which are supported by side braces. This cradle is pivoted so that the reamer can be set at an angle, which is necessary in reaming certain holes in the bilges. The air cylinder is equipped with a differential piston which is prevented from turning by two keyways cut in its sides. Air for raising the piston is controlled by a valve within easy reach of the operator. The device takes air at 100-pound pressure. An ordinary pneumatic motor is fitted to the top of the piston.

In operation, the workman first opens the air valve which causes the piston, motor and reamer to rise. Just before the reamer enters the hole



DEVICE FOR REAMING HOLES IN SHIPS' BOTTOMS AND BILGES

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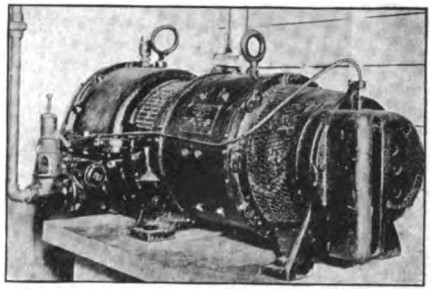
the motor is started. After the hole is reamed, the cylinder air valve is closed. the motor dropped and the device moved to the next hole. It is pointed out that the device is easily moved as it weighs but 178 pounds.

In some recent tests made with the device at the yard of the Ames Shipbuilding Co., Seattle, one man is said to have reamed 2560 ⅞-inch holes in eight hours. In the Albina shipyard, Portland, Oreg., some tests were made covering a week's operations. One man, on an average, reamed 1125 ⅞-inch holes per 8-hour day against 756 holes of the same diameter, the average for two men reaming by hand in the ordinary way.

Compact Lighting Plant

In cases where space is limited, the problem of providing an adequate generating unit for electric current aboard craft such as tugboats and other small river and harbor vessels is serious. The set shown in the accompanying



DIRECT-CONNECTED TURBINE-DRIVEN LIGHTING SET

illustration was designed by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and is in use on a United States government tugboat. It is a compact unit of 7½ kilowatt capacity. It generates direct current at 250 volts, and has sufficient power to provide current for all the lamps needed on board, approximately 14, and for the searchlight as well.

It consists of an impulse-type steam turbine and an electric generator, combined to form a single, compact unit. It is easily installed, for all that is necessary is to bolt it to a light foundation, attach the steam and exhaust pipes, and connect the leads to the electric wiring system.

The turbine consists of a single impulse wheel. It takes steam of from 70 to 225 pounds directly from the boiler without a reducing valve, and can be operated either condensing or noncondensing. The exhaust steam is free from oil and can be used for heating purposes. The speed is 4000 revolutions per minute and an automatic governor is provided to prevent over speeding.

The generator is directly connected to the turbine and is arranged so that inspection and repairs can be readily made. The set has but two bearings, both of which are of the ball type. All parts are readily accessible and it is said that little attention is required during operation. The fact that the unit can be operated for long periods with but little attention is said to be a decided factor in its favor for small craft installation.

Business News for the Marine Trade

Contracts for the construction of a pier recently were awarded by the Foundation Co., Astoria, Oreg.

Erection of a machine shop has been started at the plant of the Three Rivers Shipyard Co., Three Rivers, Que.

The Greater New York Ship Service, Hoboken, N. J., recently was incorporated to build ships with $100,000 capital.

The plant of the Titjen & Lang Drydock Co., Hoboken, N. J., recently was damaged by fire. The loss has been estimated at $15,000.

A report is current to the effect the Ramberg Iron Works, Brooklyn, N. Y., is contemplating the erection of extensions to its ship repair plant.

The Supple-Ballin Corp., Portland, Oreg., is considering plans to convert its wooden shipbuilding plant into a steel yard at an estimated cost of $90,000.

Among the recent incorporations is that of the Merchants Shipbuilding Corp., 168 Broadway, New York.

The Daly Towing & Transportation Co., R. F. Daly, 322 East Thirtieth street, New York, recently was incorporated in Delaware with $50,000 capital.

A. Frankel, 18 Broadway, New York, represents the Red Cloud Steamship Co., which was recently incorporated in Delaware with $300,000 capital.

An increase in capital from $10,000 to $100,000 has been authorized by the stockholders of the Russian-American Line, Inc., New York.

Reorganization of the Mobile Shipbuilding Co., Mobile, Ala., has been effected, and the plant has been put on a production basis of one ship a month.

The Columbia Underwriting Agency, Inc., 52 Beaver street, New York, recently was designated the marine agency for the Knickerbocker Insurance Co., New York.

A 250-foot extension is being added to the fitting-out wharf at the plant of the Pacific Coast Shipbuilding Co., near San Francisco.

Among the recent incorporations is that of the Job Shipbuilding Corp., Portland, Me. The company, which is capitalized at $50,000, was incorporated by R. L. Johnson, H. I. Smith and others.

Work is expected to be started shortly on the construction of a floating drydock for the Leclair Shipbuilding Co., Sorel, Que. The dock will have a capacity of 7000 tons.

The Balymena Co. recently was incorporated to build and operate boats with $100,000 capital, by W. F. O'Keefe and others of Wilmington, Del.

F. B. Cox, 25 Broad street, New York, has been appointed to represent the Brooks Steamship Co., which was recently incorporated under a Delaware charter with $500,000 capital.

The navy department recently awarded a contract for the construction of a wharf and bridge at the Coddington plant, Newport, R. I., to be built at an estimated cost of $171,000.

A $2,000,000 drydock will be erected on Staten Island, by Frazier, Brace & Clark Drydock Corp., New York. The property will occupy the greater part of 11 acres.

The Brooklyn Drydock & Repair Corp., Brooklyn, N. Y., recently was incorporated with $5000 capital, by T. J. Dobosn, C. P. Schroetter and F. J. V. Wagner, 64 Wall street.

Capitalized at $25,000, the Southern Nautical Instrument Supply & Repair Co., Portsmouth, Va., recently was incorporated by F. R. Watts, B. E. Dalton and others.

A start is expected to be made shortly by the Dominion government on the erection of a drydock at Esquimalt, B. C., which will be constructed at a total cost of $500,000.

James Stewart & Co., 30 Church street, New York, will build a ship repair plant for the Norfolk & Hampton Roads Ship Repair & Drydock Corp. at Norfolk, Va.

Erection of a 1-story machine repair works, to be built at an estimated cost of $15,000, is contemplated by the St. Lawrence Rivers Motor & Machine Co., Clayton, N. Y.

The bureau of yards and docks, Washington, re-

New Offices

A branch office of the United States coast and geodetic survey has been established in the custom house, Boston, where publications and data required by seafarers may be procured.

The Barr Shipping Co., New York, directed by H. K. Barr, has established an office in Baltimore in connection with John S. Connor, Marine Bank building.

The Fort Dearborn Coal Co., Norfolk, Va., dealer in coal for bunkering and export, has established an office at 192 Broadway, New York. The new office is under the direction of George C. Stokes, vice president of the company.

F. S. Trosdale, George Plant, A. R. Lafonta and Harold LaJeune have formed a steamship agency and brokerage house in New Orleans.

New Orleans offices of the J. H. W. Steele Steamship lines have been moved from the Whitney building to the building formerly occupied by the United Fruit Co. at 630 Common street.

The China, Japan and South America Trading Co., of which Charles de la Vasselais is New Orleans manager, has leased a 4-story building in Gravier street for a long term. The firm will occupy the entire building.

The Minneapolis office of the Chicago Pneumatic Tool Co., Chicago, is now located at Fifth avenue and Fifth street, South Minneapolis, Minn. Formerly the office was located in the Metropolitan Bank building. The new office carries a complete stock of pneumatic and electrical tools, air compressors, oil engines, rock drills and spare parts for the company's various products.

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cently took bids for the erection of a naval air station and works at Galveston, Tex. The station will be built at an estimated cost of $750,000.

The Golden-Van Doorn Shipping Corp., New York, recently was incorporated with $20,000 active capital, by G. C. Nardin, H. C. Van Doorn and C. J. Golden, 25 Beaver street.

The South Atlantic Dry Dock Co. has been incorporated with $1,000,000 capital, by William F. O'Keefe, J. H. Dowdell and George G. Stiegler, of Wilmington, Del.

Ground has been broken for the erection of a 1-story, 52 x 120-foot addition, at the plant of the Baldt Anchor Co., Sixth and Butler streets, Chester, Pa.

An office recently was opened in the Marine Bank building, Baltimore, by the Barr Shipping Co., 25 Beaver street, New York, and plans call for the opening of another office in Boston shortly.

A new marine organization recently incorporated in Delaware is that of the States Marine Crew. The company is capitalized at $100,000 and was incorporated by P. B. Drew and otehrs.

T. L. Croteau, P. B. Drew and M. H. Knox, Wilmington, Del., recently were named as the incorporators of the Pacific Concrete Shipbuilding Corp., which has been chartered with $500,000 capital.

A loss estimated at $15,000 recently was caused by a fire at the plant of the St. Helens Shipbuilding Co.'s plant. A large warehouse was among the buildings damaged. The plant is located at St. Helen's, Oreg.

Harold J. Gallagher, Mount Vernon, N. Y., Winthrop H. Kellogg, Port Washington, N. Y., and Robert M. Reid, were named as the incorporators of the Charleston Drydock & Machine Co., which was recently incorporated with $2,225,000 capital.

The Adelphia Steamship Corp., New York, recently was incorporated with $100,000 capital, by G. W. Sterling, 170 West Seevnty-eighth street, E. R. Richardson, Madison Square hotel, and J. M. Davis, 14 East Sixtieth street.

A recent incorporation is that of the Biloxi Fisherman's Packing Co., with headquarters at Biloxi, Miss. The company will engage in fishing and seafood packing. A fleet of auxiliary fishing schooners will be operated by the company.

Purchase of the plant of the Lake Erie Dry Dock & Mill Co., Sandusky, O., has been made by the Scientific Mfg. Co., and the plant will be converted to a factory for the manufacture of sectional automobile rims.

A recent incorporation is that of the Line Stevedoring Co., Brooklyn, N. Y., which is capitalized at $20,000. Incorporators are C. H. and C. Pearsall, L. E. Conklin and D. T. Smith, 629 Sixty-eighth street.

A 1-story addition, 60 x 70 feet, to be devoted to the manufacture of marine engines, is being erected at the plant of the New London Ship & Engine Co., Groton, Conn. The building is being constructed at an etsimated cost of $25,000.

The plant of the Chickasaw Shipbuilding Co., Mobile, Ala., is now being operated at maximum output, and plans are under way to lay two keels within the next two months. George C. Crawford is president of the company.

Plans for the erection of a landing dock, equipped with a traveling crane, are reported being prepared by the St. Helens Dock & Terminal Co., St. Helens, Oreg. The company was recently organized with $200,000 capital.

The Northern Stevedoring Co., 16 Beaver street, New York, recently was incorporated to engage in stevedoring and contracting . Robert Wild, well known in shipping circles, is general manager of the firm.

A recent incorporation is that of the Wilson Shipping Corp., New York. The company, which is capitalized at $200,000, was incorporated by R. A. Van Voorhees, Jersey City, N. J., Paul E. Britsch and Arthur Oaklet, Pearl River, N. Y.

Incorporation papers recently were taken out by the Moran Shipyards Corp., New York. The company will build ships. It was capitalized at $25,000, and was incorporated by M. Roger, 231 First street, Union Hill, N. J., E. G. Halbert, 418 Second street, New York, and W. C. McCreary, 217 Prospect place.

The American Ship & Commerce Corp. recently was granted a charter in Delaware. The concern is reported to have been formed for the purpose of consolidating the Cramp Shipbuilding Co., Philadelphia, the Kerr Navigation Co., New York, and other companies.

A salvage and wrecking firm in Havana, Cuba, is in the market for two steel, seagoing tugs of not less than 14 knots, and two 1000-ton steel barges, with salvage equipment, drawing five feet or less. The firm may be reached through the bureau of foreign and domestic commerce, 1020 Whitney-Central building, New Orleans.

It has been reported that negotiations are about to be closed for the purchase of the Albina Engine & Machine Works' shipbuilding plant at Portland, Oreg., by the Foundation Co. Bayly Hipkins is Pacific coast manager for the Foundation Co., which, according to the report, will construct 10 vessels at the plant for French interests.

The Southern Shipyard Corp., recently organized with $200,000 capital, plans to erect a shipyard at Newport News, Va., for the construction and repair of wood and steel ships. Sanford & Brooks Co., Baltimore, have a contract to construct a 3000-foot bulkhead and a 40 x 500 foot dock. The Truscon Steel Co., Youngstown, O., has the contract to erect six buildings, which will include machines, pattern and woodworking shops. A marine railway is to be installed of the Crandall type. It will be of 3000 tons capacity. O. A. Blovom is president of the company.

New Trade Publications

BLOWERS AND FANS.—The Buffalo Forge Co., Buffalo, is issuing an illustrated catalog which describes fans, blowers and exhausting apparatus. The different types of equipment described are fully illustrated and much data relative to ventilating engineering is included.

POWER CHARTS.—The Wellman-Seaver-Morgan Co., Cleveland, has published a folder containing three colored charts which give the relations in any shaft between power, shaft diameter, torsional stress and speed. Four practical examples are included which show just how to use the charts.

GALLEY EQUIPMENT.—A catalog describing electric cooking apparatus recently was issued by the Duparquet, Huot & Moneuse Co., New York. The catalog is well illustrated. In its 88 pages the various articles listed are fully described. The information contained will prove of value to those interested in such equipment.

PROPELLERS.—The Thacher Propeller & Foundry Corp., Albany, N. Y., is issuing a catalog devoted to its propellers. It is pointed out that these products are carefully balanced and measured for pitch before being delivered. Several interesting illustrations are included which show how the propellers are tested and balanced.

BRONZES.—A catalog describing and illustrating hydraulic castings, gear wheels, propellers, ingo's, valves, bearings, bushings, forgings, rolls, shapes, etc., was recently issued by the American Manganese Bronze Co., Philadelphia. The various articles are fully described and the catalog contains much information for the shipbuilder and engineer.

VENTILATED FLOORING.—The Irving Iron Works Co., Long Island City, N. Y., has issued a catalog describing its gratings, stair treads, etc., as used in power plants, engine rooms and in other places where a ventilated flooring is necessary. Many illustrations from photographs showing actual installations are included.

ELECTRIC AIR COMPRESSORS.—The Black & Decker Mfg. Co., Baltimore, recently issued a catalog describing its electrically driven air compressors, electric drills and electric valve grinders. The catalog is well illustrated and the various units are described in detail. Several types of electric drills to meet various shipyard conditions are included together with drills, augers, chucks, etc.

INDUSTRIAL TRACTORS—The Mercury Mfg. Co., Chicago, is issuing a catalog describing its industrial tractors for various purposes. It is pointed out that these units are of value in tranporting materials on docks and in loading vessels where cargo can be carried in through side hatches. Owing to a peculiar design of coupling, the trailers, which can be any number from one to fifteen, follow the tractor so accurately that the danger of the train hitting a post, stanchion or other obstruction is eliminated. The device is fully described and numerous illustrations are included which show the tractors in actual use.

STEAM PUMPS.—Of interest to marine engineers and vessel owners is a catalog recently put out by the Union Steam Pump Co., Battle Creek, Mich., devoted to marine steam pumps and condensers. Numerous illustrations are included and each unit is described fully. By means of line drawings the type of valve used by the company is illustrated and its operation described.

OIL ENGINES.—The Pittsburgh Filter & Engineering Co., Pittsburgh, recently issued a pamphlet describing heavy duty oil engines for marine or stationary work. This publication is known as bulletin O. E. 20. It is pointed out that in the design of its engines, the company has combined simplicity of construction with accessibility of parts. Several facts concerning diesel engines are included with an interesting table showing comparative cost data for different types of engines. The company's engines are fully described and illustrated.

FORGINGS.—Walter Somers & Co., Ltd., operating the Haywood Forge, Halesowen, near Birmingham, England, have issued a handsomely illustrated catalog which contains not only views of this well equipped plant, but of the miscellaneous product manufactured. This plant is equipped to produce steel and iron forgings up to 100 tons in weight and during the period of the war it was engaged almost exclusively in the production of 15-inch shells. The plant was founded in 1866 by the late Walter Somers and in 1895 it was converted into a private limited company, Walter Somers having occupied the position of chairman until his death in 1917. The works cover an area of 15 acres and consist of forges and machine shops. The forges are equipped with 12 steam hammers, ranging from 1250 pounds to 12 tons, and seven hydraulic presses, ranging in capacity from 600 to 3600 tons. This equipment permits of the production of forgings up to 100 tons in weight. The machine shops are thoroughly equipped throughout and the tools have sufficient capacity to handle shafts over 120 feet in length. Among the forgings produced and illustrated in this catalog are steel stern frames of very large size, marine-type built-up crank shafts, 3-throw crank shafts for reversing mill engines, hydraulically pressed steel crank shaft, a steel screw 84 feet 7 inches long, 11½ inches in diameter, with a 2-inch pitch forged from one ingot for 150-ton sheerlegs at the Chatham dockyard, a steel builtup 2-throw crank shaft having 2 foot 6 inch centers, for driving large reversing rolling mills, with a finished weight of over 38 tons also is illustrated. Hydraulically pressed steel rolls with a forged weight of 22 tons each, also are shown as well as housing pins and boxes for rolling mills, large rotary wheels, forged steel gear wheel discs and rims, forged propeller brackets, rudder frames, etc.

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